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MADRAS JOURNAL

OF

LITERATURE AND SCIENCE.

No. 12.—NEW SERIES.

December 1861.

XIV—*Remarks on the Druidic Antiquities of the South of India.* By Major H. Congreve.

Cromlechs.

The Cromlech at Palicondah in the Carnatic, is remarkable for its double ring of stones. In my account of it in this Journal,* I did not place sufficient emphasis on this circumstance, which is one of the greatest evidences of the Druidic origin of this altar as will be seen from the following account of similar antiquities in Europe. At this day, in Denmark, Sweden, and Norway, in the middle of a plain, or upon some eminence, altars are found, around which the ancient inhabitants assembled to offer sacrifices and to assist at other religious ceremonies. The greatest part of these altars are raised upon a little hill, either natural or artificial. Three long pieces of rock set upright serve as a basis to a great flat stone, which forms the table of the altar. There is commonly a pretty large cavity under this altar, which might be intended to receive the blood of the victims ; and stones for striking fire are scattered round it ; for no other fire, but such as was struck forth with a flint, was thought pure enough for so holy a purpose. Sometimes these rural altars are constructed in a more magnificent manner ; *a double range of enormous stones* surround the altar and the little hill on which it is erected. In Zealand there is one of this kind ; which is formed of stones of a prodigious magnitude.

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* Old Series No. XXXI. March 1846, p. 47.

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Men would even now be afraid to undertake such a work, notwithstanding all the assistance of the mechanic powers which in those times they wanted. What redoubles the astonishment is, that stones of that size are rarely to be seen throughout the island, and that they must have been brought from a great distance.

In Scotland so far as can be gathered from the vestiges of such of these sacred enclosures as remain least defaced, they seem in their perfect state to have generally consisted of the circular row or double row of stones in the central open space (the proper *lucus* or place of light) and beyond these, of a wood surrounded by a ditch and a mound. A holy fountain or rivulet appears also to have usually watered the grove. Near to the temple frequently rose a sacred mount, from which it is conjectured the priests were wont to address the people.

At Trer Dryw in Anglesey are also the relics of a circle of stones, with the Cromlech in the midst ; but all extremely imperfect. Two of the stones are very large ; one, which serves at present as part of the end of a house, is twelve feet seven inches high, and eight broad ; another eleven feet high, and twenty-three feet in girth. Some lesser stones yet remain. This circle, when complete, was one of the temples of the Druids, in which their religious rites were performed.

The shape of the supporting stones of the Cromlech at Palicondah is very like the configuration of those of a Druidical altar or Cromlech found by Mr. Borrow in Spain.

" Whilst toiling along these wild wastes" he says, " I observed, a little way to my left, a pile of stones of rather a singular appearance, and rode up to it. It was a Druidical altar, and the most perfect and beautiful one of the kind which I had ever seen. It was circular, and consisted of stones immensely large and heavy at the bottom, which towards the top became thinner and thinner, having been fashioned by the hand of art to something of the shape of scollop shells. These were surmounted by a very large flat stone, which slanted down towards the south, where was a door. Three or four individuals might have taken shelter within the interior, in which was growing a small thorn tree."*

* Vide Borrow's Bible in Spain Volume I. Chapter vii.

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In beauty and capacity this Cromlech must greatly resemble the one I discovered at Palicondah.

The first sketch in the opposite page represents a remarkable and unusual description of Cromlech in the province of Malabar described to me by an eye-witness. These curious edifices are found surmounting the undulations of the country between Calicut and Paulghautcherry, especially near Ungadapooram and Mungary, at no great distance from the high road. They consist of a pedestal composed of three long stones slightly tapering towards the top, with their exterior surfaces rounded. These stones are fitted closely together, and form the frustrum of a cone. Poised on the top of them lies horizontally an immense oval or circular stone, its exterior surface being convex, while the inner is slightly hollowed. I was told by the person who described these Cromlechs to me, that one was opened by a Collector many years ago with much difficulty, when pieces of earthern ware urns, iron spear heads, and some gold ornaments were discovered.

In my account of the Cromlech at Palicondah, I stated my belief, that the ceremonies performed at such consecrated fanes were a perversion from the Patriarchal religion of sacrifice by fire on stone altars I am confirmed in this opinion by what is stated in the fourth, fifth, and sixth verses of the xxiv Chapter of Exodus.

" And Moses wrote all the words of the Lord, and rose up early in the morning, and builded an altar under the hill, and twelve pillars, according to the twelve tribes of Israel."

" And he sent young men of the children of Israel, which offered burnt offerings, and sacrificed peace offerings of oxen unto the Lord."

" And Moses took half of the blood, and put it in basons ; and half of the blood he sprinkled on the altar."

I have observed that the interior walls of some of the Indian Cromlechs are scored with rude representations of human figures, and unintelligible marks ; in which respect they may be compared with Saint Illtyd's house at Llanamllech in Brecknockshire, Wales, which is a Cistvaen, or Cromlech, seated on an eminence at a short distance from the village. This Cromlech consists of

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three stones, supporting a fourth which on one side slopes towards the ground, (the case likewise with many in India.) The side stones within are inscribed with a number of strange characters scratched with the point of some sharp instrument. It should be observed that the Cromlech at Palicondah is raised on an artificial mound at the base of which are the two circles of stones ; in a similar manner to those described by Mallet.

The conical shape of the pedestal overlaid by the flat stone, in the Cromlechs in South Malabar, reminds us of some of the Cairns in Wales and Cornwall, placed on the summits of mountains, and consisting of immense conical piles of stones having a large flat stone placed on the apex, and upon which the sacred fires were kindled.

TOLMEN.

In my account of the antiquities of the Neilgherries I described a Tolmen or " Hole of stone," and stated that a vulgar superstition attached, in England, to these apertures, to the effect that if children afflicted with weakness in their limbs were passed through the Holes they would be cured. A nearly similar superstition cleaves to these apertures in India. Mr. Grose in his voyage to the East Indies writes, " that on the extreme point of Malabar hill in the island of Bombay, is a rock flat on the top, in which there is a natural crevice, communicating with a hollow that terminates towards the sea." " The Gentoos," he adds, " use this place as a purification of their sins, by going in at the opening, and forcing their way (a difficult task as it appears for a corpulent person) through the crevice."

The Tolmen or Petra Ambrosiœ may be the " holes of the rocks" referred to by Isaiah.

The Tolmen was either a natural aperture formed by one rock resting upon the ends of two others, or it was an artificial and circular boring in the rock. The bodies of men were even passed through these apertures in ancient times in England, as it was believed that great effects were thereby produced.

UPRIGHT STONES.

Since I wrote my account of the Antiquities of the Neilgherries in which I mentioned the existence of upright stones on those

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mountains, I have enjoyed opportunities of examining some in the low country. At Pallipollium in the Salem district is an upright stone or slab eighteen feet high planted in the ground, a sketch of which is annexed. This stone has more of the Druidical character than any I have yet seen. Not far from it I discovered five Cairns, and a Cromlech. Near Peri Soondrum in Mysore I found two upright stones with some Cairns, and a Cromlech in the neighbourhood. This association of the Upright stone with the Cromlech and the Cairn, in India, occurs likewise in England, and Wales; and it is another striking proof that these curious antiquities are vestiges of the same religion.

Sir Richard Hoare says, in his Annotations to Chapter the second, of the Itinerary of Archbishop Baldwin, by Giraldus Cambrensis, when describing the Cromlech, near Llanamllech:

"A rude upright stone, as was common near Cromlechs, stood formerly on one side of it, and was called by the country people Maen Illtyd, or Illtyd's stone, but was removed about a century since by Mr. Walbeof, the lord of the manor, who made use of it in building."

At no great distance from the Druidical temple at Stonehenge, a huge stone sixteen feet in height used to stand; while within the entrance to the outer court stood another twenty feet high. These and other similar upright stones have been supposed to represent statues of a British deity called Ceridwen. Such stones were generally erected in sequestered spots favorable for the exercise of the ceremonies of the Druidical religion. Mr. Oliver pronounces these upright stones in England to be vestiges of the ancient Buddhic religion. We know that the Saxons, descendants of the Goths, or Asœ, also set up upright stones, and logs of wood, in the midst of circles of stones. A square upright stone called Herma represented Mercury both in Asia and Europe, he was a deity of the Druids, and by some supposed to be the same as Buddha.

The idol Manah of some of the tribes of the ancient Arabs, was nothing more than a large stone, in front of which, human sacrifices were made.

The upright stones, now our present subject, must not be con-

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founded with the Hare or Hoar stones so called in England, and met with in India, as well; which were in both cases, and still are in the latter, used to mark out the limits of pasturage, and cultivation. Many of these boundary stones still exist in England; and in Wales where they are called Maen hir. They are very common in India. I saw two, side by side, and each ten feet high in a field, in the neighbourhood of Ballapoor in Mysore. Mention is made in Scripture of the use of such stones in the Patriarchal times. I give drawings of a Druidic stone in the Salem district and a group of three in Monmouthshire.

Piles of Circular Stones.

At Courtallum in the province of Tinnevelly in the South of India, are three remarkable stones, of great size, poised in a singular manner, one over the other, on the ledge of a mountain. Their appearance from below has occasioned the name of "The Turk's Head" to be bestowed upon them. I have preserved a drawing of these stones, but my recollection of them is very imperfect. I am disposed to associate them with other Druidical remains in this country.

The Cheese Wring is a pile of rude stones rising to the height of thirty-two feet, and standing near the top of a hill, in the parish of St. Clear in Cornwall. The name is derived from the shape of the stones which is that of a large cheese. There are eight stones lying above each other, the uppermost was formerly a Logan or rocking stone, but the equipoise no longer exists. On the same hill are many other large stones, one of which is eleven yards long and nine broad. St. Clear also boasts of the Hurlers which when perfect consisted of three continuous circles of upright stones from three to five feet in height. All these stone remains are of Druidical origin. The Hurlers are precisely similar to the stone rings I have seen on the Neilgherries.

Contents of the Cairns.

In enumerating the contents of the cairns of the Neilgherry Hills in a former number of this Journal, I mentioned that I had found beads, or nuts of crystal, of an oval shape, and pierced longtitudinally as though to receive a thread by which they might be suspended to the neck or arm of the wearer. It is very remarkable

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how closely this relic resembles the amulets of the Druids found in the barrows of England.

This amulet crystal was variously shaped. Sometimes like a round bead of glass; at others, like a crescent or glass boat; now it was denominated a glass circle, and now a glass house. In each case it was a powerful talisman of protection; and its colour was merely the mark of distinction between the different orders. The Druid's crystal was white, the Bard's sky blue; the Eubates' green, and the aspirants' amulet was distinguished by a mixture of all these colors. The secret of manufacturing them rested solely with the Druids.

A splendid variety of this amulet was found by Sir R. C. Hoare in a large tumulus in the vicinity of Stonehenge, which Stukeley distinguished by the name of Bush barrow. It consists of a curious perforated stone of the kind called *tabularia*, moulded into the form of an egg, and highly polished, and containing in the veins of the fossil an intricate mass of small serpents entwined together in every possible combination. It is likely that these egg shaped crystals had some reference to the Anguinum or serpents egg, an object of Druidical superstition.

Bush-barrow also contained a rich breast plate of gold, in shape of a lozenge, and highly decorated with carved work, and devices. I was assured when on the Neilgherries, that a species of breast plate, or gorget, had been found in a Neilgherry cairn, and which was about the size of those used by the Druids.

In speaking of the Earthern ware urns found in the barrows of the Neilgherry Hills I stated that vessels of the same kind had been raised from the Deverel barrow in Dorsetshire. I have since learnt from Dr. Henry's History of Great Britain that "many urns of earthern were, supposed to have been the workmanship of the ancient Britons, have been found in barrows in different parts of Britain." The articles found in Silbury Hill, and neighbouring barrows by Dr. Stukeley are similar to those I discovered in the barrows of the Neilgherries, consisting amongst other things of spear-heads of iron, knives, gold rings, and fragments of golden ornaments, several large beads of amber, some of glass enamelled: some were of a white colour, others blue and azure.

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SEPULCHRES.

Some very singular excavations were discovered between Luckington and Badminster, Wilts, called the Giant's caves. They are upon the top of a rising hill, in number about nine ; and some of them are or were formerly cemented with lime. Some of them are deeper, and some shallower, some broader and larger than others. They lie all together in a row. The manner of them is two long stones set upon the sides, and broad stones set upon the top to cover them. The least of these caves is four feet broad and some of them are nine or ten feet long. Sir R. C. Hoare pronounced them to be ancient sepulchres.

These are precisely similar to a kind of ancient sepulchre met with in India, and generally associated with Cromlechs &c. Within the precints of the village of Avanashy in the Coimbatore Zillah in the South of India, I wăs shown a deep excavation whence the stones forming a subterranean vault had been removed, some of which were still lying about the mouth of the hole, the large slab which covered the vault I was told had been sent to Coimbatore. In the neighbourhood of Secunderabad in the Deccan are numerous vaults or artificial caves, exactly answering the description of those in Wiltshire.

But the most remarkable I have seen, are at Wodenhully in Mysore. In the neighbourhood of this place, I found a vast number of subterranean chambers, formed of large flag stones, and all full of earth, the tops of the walls, each a single slab a few inches above the surface, only appearing. They differed from those I found on the Neilgherries, and from those in Wiltshire, in wanting the flag stones covering the roof, which, I suspect, had been removed in former times to Oosoor, or some place in this neighbourhood, as building materials. The Karkoon of Wodenhully asserted there were nearly two hundred of these curious structures, a statement I am well disposed to believe, because when I went to look at them, I felt as though I were walking over the remains of a large town that had been buried under the earth, or the cemetery of a great city. From my examination of edifices of the same character on the Neilgherries I arrived at the conclusion that they were ancient Sepulchres ; I entertain the same belief in this case as well.

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XV.—*A sketch of the History of the Bhonsla family of Nagpore, taken from an old domestic of the Palace. (From the Records of the Nagpore Residency)* *November* 1811.

Cheema Baee the mother of the reigning Rajah,* in conversation with people of her household has often mentioned the following particulars :—

Ranojee Bhonsla, Patel of Hingunberdee, was in the service of Rajah Sahoo, (Rajah of Sattara) who promoted him to the command of his Pagah and gave him the title of Sena Sahib Sooba. Raghojee and Kanojee Bhonsla, his first cousins by the father's side, were in the service of Nizam-ool-Moolk Asoof Jah, and enjoyed Omraotee and Bham in jagheer from that Chief.

Ranojee had a son Pursojee who succeeded to the office of his father, and whose son Raghojee received from the Sahoo Rajah the Sicca and Kathar† and his shoes, with a command to take possession of any country which he might be able to conquer. Raghojee upon this came to Bham and lived with his relations Raghojee and Kanojee who had been employed in performing a sacrifice to fire for three years, and had cast into the furnace images of Khunde Rao and of Devee, each of gold to the amount of 5½ maunds. When the last hand was to be put to the ceremony Kanojee had been too intimate with a dancing girl, and he accordingly told the officiating Brahmin to complete the sacrifice with the assistance of Raghojee, and to give to the latter the golden images, which was accordingly done. Some time after these things Raghojee first crossed the Wurda and began to plunder to the eastward of that river : in consequence of which the Gond Rajah of the country, Chand Sultan, opened a communication with him which terminated in a mutual friendship.

Chand Sultan's brother Akbar Shah was associated with him in the Government of the countries of Deoghur and Nagpoor. Ikbal Shah their first cousin by the father's side then ruled at Chanda,

* Raghojee the second who fought against us in company with Scindia at Assaye in 1803.

† Seal and Dagger, emblems of Princely rule in India.

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of which country he was the independent Rajah. A battle was fought between Akbar Shah and Chand Sultan, near Khapa, in which the latter was slain; Akbar Shah soon after died a natural death. Ikbal Shah in consequence seized on the Government and having secured the wife of Chand Sultan, Taramuttee, known by the name of Rutton Koowar, with her son Boorhan Shah in Nagpoor, returned to Chanda.

Mahomed Ameer Khan of Chuppara was originally a servant of the Moguls. He afterwards served Chand Sultan, but subsequently engaged himself to Raghojee. Taramuttee, Chand Sultan's widow, wrote in these terms to Raghojee, "Our relations have deprived us of the Raj and even of subsistence, do you come to our assistance and recover the Raj, half of which you shall have in recompense for such a service." Raghojee on receipt of this invitation proceeded immediately to Nagpoor, accompanied by Ameer Khan, and the Pathan Chief who resided in Ellichpoor on the part of the Moguls. From the co-operation of the Ranee and her son, Nagpoor fell into Raghojee's hands without resistance and the army of Ikbal Shah fled to Patunsaongee. Raghojee followed and defeated it, took Deoghur and Ghurra Mundla, then conquered Chanda, &c., and returned to Berar; of the latter country he took a fourth and again came to Nagpoor. He next took Raepoor and Ruttenpoor from the old Rajpoot Princes; and soon after went on a pilgrimage to Benares, where he remained for six months and returned to Nagpoor. Here he was afflicted with a complaint in his back called "Pathraj" under which he suffered for three months.

Cheema Baee, daughter of Manajee Mohittea of Sattara, was married to Moodhajee at Sattara during the life of Raghojee and at Raghojee's death Moodhajee was sixteen and Cheema Baee eleven years of age. (The latter was about eighty, when she died in 1819.)

Raghojee had twelve wives, of whom two only gave him any offspring; viz. Soolla Baee and Balla Baee; the former his first and the latter his favorite wife or Putranee. Soolla Baee's children were Moodhajee, Bheembajee and a daughter Bhowanee Baee. Balla Baee's children were Janojee, Sabajee and one daughter, Baka

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Baee. Janojee and Moodhajee were born on the same day; but the former in the morning and the latter in the evening. First, therefore, Janojee was elder born and secondly he was born of the Putranee (or favorite wife) and accordingly succeeded to the Raj.

Before his death Raghojee called his sons to him and spoke as follows: "Let Janojee have the Raj of Deoghur, the city of Nagpoor and the sovereignty: Moodhajee take Chanda, Sabajee the estates of Dharwar and those in Berar, and Beembajee Chutteesgurh and its dependencies." He also exhorted them to be unanimous.

But to return, when Raghojee returned from the pilgrimage, the great Sahoo Rajah being on the point of death, wrote a letter inviting Raghojee to Sattara to settle the affairs of the Raj. This letter the Peishwa intercepted and suppressed, and Raghojee was at the time sick; both of which circumstances prevented him from attending his sovereign in his last moments. Ram Rajah succeeded to the Musnud, although he was not the legal successor, and the Peishwa assumed the management of the affairs of Government.

After Raghojee's death, Janojee leaving his three brothers in Nagpoor proceeded to Sattara with a small force to receive the Khilut of investiture as successor to his father. Ram Rajah gave him the Khilut on the condition that Janojee should present nine lacks of rupees for the kitchen expenses and maintain ten thousand troops for the service of the head of the Mahratta Empire. In conformity to this condition Janojee with his contingent performed military service for the space of two years and then returned to Nagpoor. At this time grain was very cheap in Nagpoor as will appear from the following statement; wheat, gram, rice and doll, sold at Rs. 2 per candy; jowaree at Rs. 1½ per candy; and ghee at 12 seers for the Rupee.

Janojee's whole form and appearance was very like that of Pursojee the present Rajah's son, but he was thinner and more muscular. Moodhajee was in every respect like his son the present Rajah Raghojee. Sabajee and Beembajee were tall like their mother; but there is no one in the family now, who resembles them in features.

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Janojee, as is said above returned to Nagpoor. Five or six years after his first vist, Janojee and Moodhajee went together towards Sattara, at which period, Nana Peishwa* came to the Godavery on his march to support the Bhow and Wiswas Rao, who had gone to the campaign of Paniput. Janojee met the Peishwa on the Godavery. The Peishwa was accompanied by ten thousand troops nearly all Mussalmans, and Janojee remained with ten thousand more and marched along with the Peishwa to the Northward of the Nerbudda. Moodhajee returned to Nagpoor from the Godavery. The Peishwa had advanced to Oojein, where he received the intelligence from Holkar of the defeat and death of the Bhao, and Wiswas Rao at Paniput, (A. D. 1760.) In consequence of which he returned with Holkar and Janojee to Poona. The latter were both with the Peishwa at his death and Madoo Row succeeded Balajee Nana Sahib,* and gave Janojee leave to return to Nagpoor.

After this when the Peishwa and the Nizam fought together in A. D. 1762 at Ratikur Bhoowun, Janojee told Moodhajee that as he had himself personally attended the Peishwa three or four times, Moodhajee should go instead for this time. Moodhajee answered that he had but few troops and little money. In consequence a disagreement took place between the brothers, but at length Moodhajee set off with all his family and troops and joined the Peishwa at Ratikur Bhoowun. After the battle Moodhajee remained a year in that quarter, and then, leaving his family behind him, came first to Nagpoor and afterwards to his own province of Chanda. For three or four years after this Janojee performed no service for the Peishwa, and sent no presents, in consequence of which he fell under the displeasure of the Poonah Court. Hearing that a storm was brewing, Janojee sent his own family and Sabajee's, and Moodhajee bringing his family from the place of their former residence, also sent his, to the fort of Gawilghur for security. Beembajee was in Chutteesgurh with his family, where he had been ever since the death of Raghojee, excepting that he had visited Nagpoor on two occasions of marriages in the family.

* The third Peishwa, son of the great Bajee Rao.

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Janojee and Moodhajee having as above mentioned sent their families to Gawilgurh, went with all their forces into the district of Aurungabad. The Peishwa also came there with his army and a battle took place. The Ministers of the Peishwa privately advised Janojee to retire, and left the road open to him so that he fled to Nagpoor. Moodhajee remained concealed somewhere and Sabajee had not left Dharwar. The Peishwa did not attempt to molest Sabajee. When Janojee arrived at Nagpoor all the inhabitants, thinking the Peishwa's army would come and plunder the city, had fled to Pertaubgurh, Bedgong and Sapgurh in the hills of Berar. Janojee also proceeded to the Hills, and having comforted the inhabitants, paid his troops with 5 or 6 lacs of Rupees, which he took from Kuaroo Patel, a rich Zemindar. There is a tank called Kuaroo Patel kabund, which supplies water to several villages in that neighbourhood. Here the Patel was seized, and having realized all the money that could be extorted, Janojee with 4 or 5,000 horse without tents, infantry, or guns, went through the most unfrequented roads and jungles towards Poonah.

In A. D. 1766 the Peishwa came to Nagpoor and set fire to the town without the walls. Janojee in like manner burned the suburbs of Poonah. Gopikah Baee the Peishwa's wife, who was left as Regent, wrote to the Peishwa this intelligence ; in consequence of which the Peishwa marched back towards Poonah after remaining three days at Nagpoor ; and Janojee returned as he went to Nagpoor. The two armies crossed without meeting.

The Peishwa and Janojee continued for the rains at Poonah and Nagpoor, and after the rains Janojee marched with his army to Zerola a place on the Taptee river. Here about noon in 1772 Janojee received a letter from the Nizam. Immediately on hearing it read he was taken ill with a pain in his stomach. Raghojee, Moodhajee's son, was with him and Moodhajee was somewhere in the neighbourhood. Janojee finding his end approaching, sent for Moodhajee, and the brothers had a meeting. After which Janojee died about midnight. Moodhajee placed Raghojee in Janojee's arms, and gave him the Sicca and Kathar. Four concubines burnt themselves with Janojee, Jeewa, Jugga, Chandnee and Mukhomullie.

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Darya Baee, Janojee's senior wife, had at this time come from Gawilghur to Ellichpoor on the occasion of the marriage of the Nabob's sister. At this place she heard of Janojee's death. Immediately on hearing it she came to Nagpoor with all the family from Gawilghur. The Peishwa sent the usual mourning clothes, and Raghojee and Moodhajee returned to Nagpoor.

The Baee procured the Khilut of investiture from the Peishwa for Sabajee, and he was seated on the Musnud. Sabajee had full authority for one year, whilst Moodhajee remained at Chanda, when a disagreement arose between Darya Baee and the former, and the Baee wished to give the Raj to Raghojee who was then 15 or 16 years of age. To proceed, Darya Baee and Sabajee both went to Bhooranpoor and the latter plundered the former with the assistance of some of the Nizam's troops. Open hostilities then began; the Baee returned to Nagpoor and Sabajee went to Nurnalla to Zuffer-ood-Dowlah, alias Dhounsa, the Nabob of Ellichpore, and exchanged turbans with him. He asked his assistance and offered to eat and drink with the Mussulmans to obtain his object; but Dhounsa told him that there was no occasion for his doing so, promised his assistance and told him to go to his own place with his mind at ease, and to call for him whenever he had occasion for his services. On this Sabajee came and fixed his residence in Berar. The Baee carried on the government for two years and a half by the hands of two brothers Deenajee Narrain and Appajee Punt. At the same time that Sabajee came into Berar from Nurnalla, Moodhajee also arrived from Chanda; they were separated by about ten marches. The Baee called for Moodhajee, saying that she would agree to settle the sovereignty on his son Raghojee. Sabajee at once wrote to the Baee and to the Peishwa in these terms:—"Why did you first give me the Raj and now try to take it away?" The Baee and Moodhajee were united, and Sabajee prepared for battle. The Baee heard that Sabajee's force was very strong, and sent Raghojee and Bala Baee his sister to pacify Sabajee, but in vain, for he detained them both and advanced to Paunchgaon. Moodhajee marched with his army from Nagpoor to meet him; but his forces were very unequal in number to Sabajee's. Sabajee was mounted on an elephant in a howdah, he seated his nephew Raghojee on another in

a howdah of a yellow colour with three Sirdars, ordering them to cut off his head in case of his own defeat or death. Their names were Lutchmun Rao Ghatkay, Lutchmun Rao Patunkur and Tookojee Nulloray. A battle took place, Moodhajee was on horse back and approached Sabajee's elephant. Sabajee threw a javelin at him without effect. Moodhajee shot his brother with a pistol loaded with two bullets through the head, and Sabajee sank and died instantaneously in the howdah ; Moodhajee immediately mounted his brother's elephant. That on which Raghojee was seated was in the rear of it and on Sabajee's death Patunkur drew his sword to execute Sabajee's last orders. Tookojee Nulloray restrained his hand ; Patunkur was wounded in the struggle ; and Moodhajee had him trampled to death by an elephant. The army detained Sabajee's corpse for three days as a pledge for their pay. On this Sabajee's two wives, daughters of two brothers of the Mohittea clan of Kenikotah, Yasodah Baee and Ahalyah Baee, being informed, they desired the army to come to Nagpoor with the body and supplicated the Chiefs to receive their pay from Moodhajee, or whoever ascended the Musnud but to release the body; the army accordingly gave up the body. It had on a stuffed jacket ; but as it was much swelled they were obliged to cut it open : both his wives burnt themselves with him near the temple of the great Raghojee in Nagpoor. A Jharjee or plain sepulchral monument was erected on the spot. When the news of Sabajee's death reached Dhounsa, the Nabob of Ellichpoor, he marched towards Nagpoor. The female servants of the palace were sent off to Chanda, and the ladies to Gawilghur. With the latter went Vincajee Bhonsla being then about 8 years of age : Raghojee, Moodhajee and Chimnajee pitched their camp on the outside of the city. Dhounsa came to Nagpoor which was deserted except by the poor, and having remained encamped there for three days, during which matters were amicably settled between him and Moodhajee, he returned to Nurnalla. Dhounsa demanded that an illegitimate son of Sabajee's, named Hybut Rao, or more commonly called Dadajee, should be given to him to take care of, as being the son of a person with whom he had exchanged turbans. But Dadajee was kept in prison at Gawilghur, and Dhounsa went away without knowing where he was. He re-

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mained imprisoned until ten years ago, when he was released; and he now resides at large but in a very humble position at Nagpoor.

When this business was over, Moodhajee carried Raghojee to Poona to obtain the Khilut of investiture for him. Raghojee obtained the old title of Senah Sahib Soobah, and Moodhajee as his Prime Minister and Regent, the title of Senah Sahib Dhoorundur, with the corresponding dresses of honor and the original conditions of service and tribute kitchen expenses of the Sattara Rajah. They then returned to Nagpoor.

Raghojee's first marriage with Gujra Baee the daughter of Kedarjee Mohittea was now celebrated, and Beembajee with his wife Annunda Baee attended this marriage. After which he returned as usual to Chutteesghur. After this all the women of the family and Moodhajee, Raghojee, Chimnajee and Pursojee (Raghojee's infant son) went on a general pilgrimage to all the sacred places of their native country. Raghojee returned from Pytun to Nagpoor and all the rest having visited Punderpoor and Nassick, went to Waee. From thence Chimnajee went alone to Badamee, and Moodhajee came to Sattara with the rest. The informant herself was on this expedition. The Rajah of Sattara entertained them with great distinction. At this time Pursojee Bhonsla, Raghojee's son by Gujra Baee, was 7 years old. Ram-Rajah gave him a Khilut and the Dawalee or belt of youth. A year after leaving Nagpoor, Moodhajee returned to it from Sattara, Gujra Baee having been with him during the whole expedition.

Chimnajee returned from Badamee six months after, and remaining a year at Nagpoor went to Cuttack, and having established the authority of the Bhonsla in those parts returned to Nagpoor. Chimnajee was very fat.

About this time Moodhajee persecuted a Tembekur Brahmin. The cause was a report that the Brahmin every day made offerings to Devee of arrack and flesh, being a Shaktee Poojaree. Moodhajee sent and seized all his sacrificial implements, and had them brought with the offerings of liquor and flesh before him in a full durbar. The Tembekur Brahmin was an accepted votary of

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Devee. In the assembly the wine appeared as milk and the flesh as garlands of flowers. In consequence of this interference Moodhajee lay under the curse of the Brahmin and was for some days very ill, and became covered with leprosy. During his illness Raghojee and Chimnajee quarrelled about the succession to the Government. Dewajee Punt Chargore was Dewan at that time, and he remonstrated with the brothers, and pacified them; and then brought the Tembekur Brahmin after much persuasion, who prayed to Devee, and rubbed some ashes of Devee's sacrifice on Moodhajee's body, (Cheema Baee was herself present at the time) and Moodhajee instantly recovered, and his skin became like that of a young child. After this Moodhajee remained in health for six months; and Raghojee contracted a second marriage with Parbuttee Baee, of the Sirkya family. Moodhajee then made the following distribution of his dominions. To Chimnajee Appa he gave Berar with the Dharwar estates and Gawilgurh; to Vincajee Bhonsla called Manya Bappoo he gave Chanda and Chutteesgurh; and to Raghojee the Musnud of sovereignty, and all the rest of his possessions. Moodhajee died after this and was burnt near the Temple of the great Raghojee A. D. 1788.

After Moodhajee's death Raghojee went with about 10,000 men to Poona and remained there for four months. Thence he returned to Nagpoor. After this he celebrated the marriage of his son Pursojee, called Bala Sahib, with Kashee Baee daughter of Deo Rao Mohittea. Jhinga Baee, Raghojee's sister, died three days after the first anniversary of Moodhajee's death; through grief Cheema Baee eat nothing but fruit for three months. A month after Jhinga Baee's death Chimnajee Appa went on an expedition to Mooltye, and returned. He went to a nautch at Boodoo Khan Pathan's house, and came at midnight back to the Palace and eat some kitcheree; in the morning he was sitting at a window of the palace called the Hernawut Khirkee. Raghojee had a consultation with Bappoo Surdhoo, Soobah of Cuttack, and other four Brahmins on the subject of making away with Chimnajee. A slave of Chimnajee's was standing by when he was struck by "*mooth*," a species of enchantment; he shook his head. A second stroke caused his turban to fall off and at a third the blood began to flow from his nose and his neck fell on one side, and he

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died immediately. Cheema Baee was hearing some of the Puranas read, she came running to the place. Chimnajee had had a bloody flux for two months, and some people said he was slowly poisoned, but there can be no doubt that he was destroyed by magic. It required twelve men to carry his body, which was burnt at the temple of the great Raghojee. When the fire was set to the pile some motion was observed in it, which led people to think that there was still life in the body. Vincajee the youngest brother performed the obsequies. After Chimnajee's death Cheema Baee remained three months in the apartments of her daughter, Balla Baee, who had married Yellojee Mohittea. Three months after Chimnajee's death, (A. D. 1795), Raghojee and all the family went to Chinnoor on the Godavery, on account of the Sreemunta. A year after this Cheema Baee, Vincajee and Pursojee went to Benares, and Raghojee remained at Nagpoor. A year after they returned, Raghojee went to the Khurdla campaign against Nizam-ool-Moolk, and returning from thence celebrated Balla Sahib's second marriage with Ahalyah Baee of the Palkur family. After this came the war with the English (the campaign of Assaye and Argaum) when Cuttack and Berar were lost.

An account of the Ministers of the Rajah of Berar and their duties, and of other officers immediately about his person in the year 1811.

Sreedhur Pundit, a Roogvedee Brahmin, is the Persian Moonshee and the principal minister for foreign affairs and in fact may be considered as Premier.

Naroba Kaleekur, a Roogvedee Brahmin, is the chief adviser of the Rajah in matters relating to land revenue, and all the Amlah, treasurers &c. are under him.

Suddoba Abdeo a Roogvedee Brahmin, under the former, has charge of the Sillahkhanah or Treasury. Through his hands passes all the public revenue; and all questions of deficiencies or extraordinary advances below or above the assessments are managed by him.

Annund Rao Madhoo a Roogvedee Brahmin, is the Furnavees. All the accounts of the revenue and papers relating to the Per-

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gunnahs are kept by him. The Furnavees of every Pergunnah is his servant, and every year each one presents him with a nuzzur of four or five hundred rupess.

Ramajee Punt Kurroo, a Roogvedee Brahmin, is a kind of steward of the household and private expenditure, and has charge of the secret treasure. It is his duty to examine all jewels purchased and to purchase them.

Bheekajee Punt, a Shenwaee Brahmin, is the Khasgee-walla and has the charge of the Khalsa villages, or those lands which the Rajah retains in his own hands.

Jyeram Punt Bhoot, also a Roogvedee, has charge of Nagpoor Khusbah Shahpoor, and is in fact Collector of the city.

Amrut Rao Pandoorung Roogvedee is Bakshee of the Pagah.

Ballajee Pundit, a Roogvedee, called Ballajee Jamdar has charge of the Jamdar Khana or wardrobe, purchases clothes, attends to the Ranee's requisitions, and provides Khilluts, and the clothes for the slaves.

Gungadhur Chitnavees and Naroba his deputy, who are both of the Purbhoo caste, write all Mahratta letters and purwanas.

Seooram Punt Kherkeer, a Roogvedee Brahmin, has charge of the Bukshee's duftur.

Naroba Rissaldar, a Roogvedee Brahmin may be called Military Secretary as he has charge of negociations with the troops and their several commanders.

Ramjee Tantia a Roogvedee Brahmin has charge of the female servants of the palace and of the Rajah's private trade &c.

Mahadajee Mukhlusee, so called from having formerly had the office which is that of an auditor, is now Furnavees of the army: all Tunkhwah assignments pass through him.

Ballajee Appa, a Yujoorvedee Brahmin, is the Pagah-walla, or Master of the Horse. Vittul Punt has the management of the Rajah's Bargeers or personal out-riders.

Alif-ood-deen has charge of the camels, and Furash Khana or Tent equipage.

Mahdajee Naik has charge of the Hurkarah or intelligence de-

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partment. Jenardhun Bhow Prubhoo is Kamavishdar of Nagpoor.

Seoolalla is Jemadar of the Chobdars.

Dhurmajee Bhonsla has charge of the Chowree and city Police of Nagpoor.

Durkajee Barreedar has the keys of the Sillakhana.

Appa Sahib's principal Officers are the following :—

Krishnajee Beroodee, a Roogvedee Brahmin is his Furnavees.

Madhoo Rao Bhokree, Roogvedee, is his chief adviser in managing his estate and in money matters, as Naroba Kaleekur is to the Maharajah.

Amrut Rao Jankoo a Roogvedee had formerly charge of the Pagah and was called the Pugnavees, but does not now hold the appointment.

Kasheenath a Yajoorvedee Brahmin, is Military Secretary.

Jaggernath a Yajoorvedee Brahmin, has the charge of Appa Sahib's banking houses.

A nephew of the late Krishna Rao brother of Gungadhur Chitnavees, holds that office under Appa Sahib.

Bapoojee Roogvedee has now the office of Pugnavees, and has charge of all the horses.

Khundojee Bhonsla has charge of the sillakhana and treasury.

Raghojee a Mahratta is Jemadar or keeper of the wardrobe.

Yenkut Rao, a Roogvedee, is the head of all the Pagah and above the Pugnavees in rank, but the latter has all the authority.

Pursojee commonly called Balla Sahib's officers are Seed Rao Purbhoo the Dewan ; Appajee Panchpor the Jamdar; Bullum Doss, a Kayath, is general Manager of the household ; Krishna Rao is Pugnavees ; and Seeta Ram Punt a Kannojea Brahmin has the Sillakhana under his charge

Cheema Baee's officers since her death have been transferred to the Rajah's wife Parbuttee Baee, and are as follows ;—

Yasoba Patownee, a Roogvedee has charge of the Khangee, Khasgee, Pagah, and Jamdar Khana. His three sons are also employed as his assistants. Dhurmajee Bhonsla's son has charge

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of the Chelas or slaves. Balla Baee the Rajah's sister left an adopted son Venkut Rao Mohittea who has a Dewan and Khasgee walla of his own.

A statement of the different forms and signatures required to authenticate public documents :—

Orders on the Sillakhana or Treasury are addressed to Juggonath Bhonsla.

The word " Janoon de" was formerly written by Ballajee Kaleekur, now by his son Janardhun Bappoo, and his nephew Naroba.

The date and the words, " Bahoot Kayee leheena," were formerly written by the son of Oomajee Abba, Mohdajee Punt, but now by the Rajah's own hand.

The words " Sree Lukshmee Kaunt" at the head of letters dustuks and sunnuds, are written by Sreedhur Pundit. The date was formerly written by Baba Chitnavees who was the *Mookhya*, principal or original Chitnavees, now by his son Witul Rao Bappoo. " Bahoot Kayee Leheena" in sunnuds is written by the Rajah himself, and " Janoon de," which comes before it, by Anund Rao Furnavees.

The Sikka or seal was formerly with Dummajee Punt, but is now kept by Naroba Chitnavees. The word " Bar" at the end of all purwannas. is written by Gungadhur Chitnavees.

The seal which is used at present is that of the first Raghojee, and the Sanscrit legend runs thus: " Sree Shahoo Raj Pudambhoj Bhramarayite Chatas-ya-Beembatmajas-ya-Moodrusha-Raghojee-was-ya-verajate," meaning in terms—This is the seal of Raghojee the son of Beembajee, who flutters about the feet of the sacred Sahoo Rajah like the bee about the Lotus."

Scindia's seal is :—" Jotiswaroop charnee tatpar Mahadajee soot Dowlut Rao Sinde nirantar," which means,—" For ever a worshipper at the feet of the Self-Resplendent, Dowlut Rao son of Mahadajee Scindia."

The Peishwa's is :—" Raja Sahoo narpatee harsh nidhan Bajee Rao Ragonath purdhan," that is to say,—" Bajee Rao son of Ragonath, the Minister of Raja Sahoo, lord of the wealth and happiness of mankind."

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XVI.—*Contributions to the Geology and Mineralogy of the Neilgherry Hills.* By MAJOR H. CONGREVE.

> "And this our life exempt from public haunt,
> Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in every thing."

MYSORE AND NEILGHERRIES.

During my hurried journey as an invalid through Mysore towards the Hills, my opportunities for Geological observation were necessarily very limited, however I do not hesitate to publish, because in the present state of Geological Science every thing contributing to increase our information must be valuable.

RAMGHUR.—About three miles to the eastward of Ramghur, rising from the plain, are a number of white rocks the partial disintegration of which has afforded the surface soil. On examination, these prove to be aggregations of felspar crystals with a few grains of quartz disseminated.

SINDHULLY.—In the undulating configuration of the surface of this part of Mysore, the Geologist at once recognises the metamorphic formation, the Rocks of which seem to be suspended, as it were, between the distant Primary Hills. A section of the surface in the bank of a nullah discovered strata of Mica slate, Hornblende Gneiss, and common Gneiss. The Micaceous Schist is passing into clay slate; it contains elongated plates of mica of a greenish color bearing a resemblance to badly pronounced crystals of Pyrophylite. Hornblende Gneiss is a rock I have never before met with in this country. It differs from common Gneiss in having small laminæ of Hornblende substituted for the plates of mica.

The soil is a red earth; the degradation of the rocks so far advanced to ruin as to comminute between the fingers: even the quartz dispersed over the surface of the country in pebbles and angular fragments, pulverises in like manner. Broken pieces of a greyish conglomerate are also met with. I was unable to ascertain the dip of the Strata.

GOONDULPETT.—The plain between the Bungalow and the Fort is strewed with fragments of conglomerate and porphyry. The

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latter has a gangue of compact Felspar, embodying small crystals, of various minerals. It approximates to the Elvan of the Cornish Miners. My friend Doctor Burrell detected this rock cropping out in the Fort ditch, associated with Gneiss, Hornblende Rock, and Limestone.

Neilgherries.

The labours of De Benza and others have thrown considerable light upon the Geology of the south and west districts of these Hills. To the north, and east, there is an extensive scope remaining for further research. To these points I shall principally direct my attention.

I briefly premise by saying that the absence hitherto of Secondary and Tertiary Rocks, as well as of organic remains, has induced the belief that the Neilgherries were elevated at a period long anterior to the existence of those formations.

Soils.—Beneath the vegetable soil is a diluvial stratum (hereafter to be noticed), super-imposed upon a red soil ; obviously the decomposition of the Hypogene Rocks subsequently indurated into a wackke.

The best proof I can adduce to this notion, is a section of the Hill at the point where the surplus waters of the lake at Ootacamund are discharged. In wet weather the Geologist may discern in this mass of clay, striped and mottled with a variety of colors, the remains of Granite, Greenstone, and Syenite. In some places white bands traversing the mass, indicato what was once a mass of quartz ; in others a black substance crossing the bed denotes the former existence of a trap vein. At places where the rocks have had Felspar for their principal ingredient, the clay becomes a Kaolin (Porcelain clay), this is used for white-washing the houses on the Hills.

White. yellow, and red are its colours, derived from the varying proportions of the iron in the Hornblende entering into the composition of the old rock. The wackke occasionally passes into a Tufa, colored yellow by oxide of iron which soils the fingers.

Masses of a white mineral are met with on the sides of the Hills, that considerably resembles indurated Lithomarge. It adheres to

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the tongue, is polished by the nail, has a conchoidal fracture, when treated *per se;* before the blow pipe hardens into a white enamel; it does not make a paste with water, nor fall to pieces when submerged in it; occasionally it is veined with yellow and blue: is not acted upon by muriatic acid: an action, though very feeble, taking place under sulphuric acid, would denote that the greasy feel of this mineral arises from the presence of magnesia. Zeichenschiefer or black chalk I have found in a valley north of Ootacamund.

Alluvium.—Under this head I first notice the turf swamps, or as they have been called peat bogs. These lie in hollows excavated in the red soil by running streams, and in the low valleys.

The lowest stratum of turf probably consisted of decomposed ferns and grasses transported from the Hills by those streams and rain. Grasses then growing on this foundation, decayed and furnished a fresh soil for another crop, which in process of time gave place to a third derived from the seeds of the preceding; thus these grasses not only gave birth to a progeny, but likewise decomposing into turf contributed in the sequel to nourish it. I shall have further occasion to glance at this method of vegetable propagation, in speaking of the diluvium of these Hills, and I may add here that the production of the ferns is a further instance of it.

Passing through a fern field I have observed the living ferns rearing their heads over the ruins of a former crop, now lying bent down beneath them, and gradually passing into a vegetable soil. It is a matter of considerable surprise to me that these turf swamps have not been more largely turned to agricultural purposes; the deltas of some of them have certainly been drained by the natives, cleared, and used as gardens.

Rice sown would I apprehend yield an abundant return. The turf of these morasses seems to be of very recent origin, stems and leaves of grasses being still entire in it. Specimens containing a small proportion of earthy matter will burn many hours. Under a blast from a pair of bellows, or a blow pipe, a beautiful blue flame is elicited, accompanied with a slight bituminous odour. The depth of the turf of course varies.

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No remains of animals of extinct species, as far as I can collect, have as yet been discovered.

The Hill streams disengage from the banks of their channels small fragments of the primary rocks, and deposit them in their beds, they are usually angular fragments, being too near their gangues to be yet rounded by attrition. In the sands of the Ootacamund lake are small pebbles of quartz, which if possessed of a deeper shade of green would be called Prase.

I must not overlook the deposit of a soft unctuous scarlet ferruginous mud, from the waters of some rills in a valley between Ootacamund, and Chinna-Coonoor. Where the waters have partially stagnated, they are encrusted with a *chatoyant* film; the taste is usually that appertaining to chalybeate springs. I shall take occasion in the sequel to refer more particularly to those waters.

Diluvium.—There is every reason to suppose that the deluge took these Hills within its scope.

That this flood swept over the mountains in a torrent from the Eastward, is manifest in the position of the Erratic blocks and Boulders, which lie generally along the western slopes and bases of the eminences. It is also confirmed in the arrangement of the Diluvial stratum, in the presence of conglomerates cemented by an indurated clay of aqueous origin, and, what seems singular to assert, in the greater luxuriance of vegetation on the Western faces of the Hills. The boulders and blocks consist of granites, Eurites, Syenites, and greenstones, chiefly resting on the red soil into which some of them have sunk partially owing to their great weight; many of them have been rounded by attrition during their head-long flights while suspended in the torrent. Occasionally they are seen in groups, sometimes wholly detached.

Between the vegetable soil, and the red earth which had probably commenced decomposing before the Deluge, lies the diluvial detritus, consisting of fragments of various rocks here met with, sometimes rounded into pebbles. The detritus in many cases may be seen to have fallen into rents in the substratum. This deposit cannot be classed as alluvial, for no casual overflowing of streams or ordinary rains could have deposited it where it prevails,

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Moreover were it of such recent origin, we should expect to find below, in a blackened soil, evidence of former vegetation ; such however may be looked for in vain.

I have observed that the ravines and vallies on the Western sides of the Hills are more fertile than in the opposite direction, this corroborates my opinion regarding the direction of the flood from the Eastward. At the time the waters began to subside, the body of them still flowing Westward, partial stagnations took place under the western sides of the mountain ridges acting as breakwaters upon the torrent. In such tranquil spots it deposited soil in the ravines which shortly gave birth to forests. These forests at a subsequent period, in their ruin by the hand of time, created another vegetable crust for younger trees, an operation that has gone on ever since, and still continues. On the other hand, the Eastern sides of the ridges being exposed to the current of the waters, could hold no soil, and it was not until a long subsequent period that vegetation took root in a stratum derived from the disintegration of its groundrock. The conglomerate and garnet pudding-stone, on a future occasion to be described more fully, are evidently of aqueous origin, being consolidated by a clay made by water.

There cannot possibly be an objection to citing Holy Writ in support of an hypothesis which, when proved to be true, in return tends to corroborate the truth of the Scriptures. In the seventh Chapter of Genesis in the 19th and 20th verses it is said:— "And the waters prevailed exceedingly upon the Earth, and all the high Hills that were under the whole Heaven were covered." "————And the mountains were covered." 18th verse— "And the waters prevailed and were increased greatly upon the Earth, And the Ark went upon the face of the waters."

Now the expression "*went upon the face of the waters*" obviously implies the existence of a current that carried the ark onwards. Let us next endeavour to ascertain from the voice of tradition, historical record, and the same high authority, the direction in which the Ark was propelled. An universal opinion prevails that the family of Noah and his ancestors were settled somewhere in Central Asia previous to the flood. It is fair to suppose, that at the

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subsidence of the waters, Noah would endeavour to return to his own country; we therefore find the names of his descendants perpetuated in the names of countries in Central Asia. Thus Cush gave rise to Cushmere, Cushgur, Cuthy, Cutch, &c., Ninus or Nimrod to Nineveh, Assur to Assyria, and so forth. In the Chaldean history of Berosus, preserved by Alexander Polyhistor, we find Xisuthrus (Noah) and his family embarked in an Ark at the Deluge; and that subsequently the family returned to their former country. Again in the VIII Chapter of Genesis, at the 4th verse, we are told that the Ark rested on Ararat in the Corcyrœan mountains of Armenia.

Javan the son of Japhet was the first man, by historical record, who emigrated to Europe, where he probably founded the Pelasgian Colony. Such being the case, Noah could not have sailed Eastward from Central Asia in his Ark. Armenia is a region on the Western confines of Asia. This is all strong circumstantial evidence that the torrent of the flood swept over the face of the earth in a westerly direction.

About a mile north of Ootacamund is a mountain peak called Snowdon, a favourite resort of parties from the Cantonment. Considered one of the highest eminences, it may be recognised by a beacon on the summit, and forms one arm of a most picturesque amphi-theatre of hills opening to the northward. Another peak corresponding in appearance and nearly in size, comprises the Eastern branch of this concavity. These peaks with other heights in the same direction, are spurs from the mountain of Dodabett, and form the heads of ridges which slope gently down towards the margin of the plateau, where they are met by other ridges falling abruptly on their north side in mural precipices into the plains of Mysore, except at the point where a mountain range branches from the Hills across the low country. The vallies betwen the ridges first mentioned, appear to have been scooped out at the recedence of the waters of one of the Deluges that flooded the earth before the existence of man. These vallies are highly cultivated. The Hill of Snowdon, with the ridge descending from it, preserve a North East, and South West direction, forming one boundary of the valley of Ebenard.

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Crossing this Hill shortly after my arrival from the low country, I was struck by the appearance of the stones dispersed upon it, and on examination found they were pieces of Siliceous Schist, a rock, I apprehend, that has hitherto eluded the observation of the Geologists who have made the Neilgherries the field of their research. I discovered the vein of Schist appearing at the surface, half way down the Eastern *talus* of the mountain, and subsequently tracing it to the North East side I found a section two hundred feet broad associated with Trap, and forming a flight of natural steps which lead from the peak to the ridge below. At a more recent period, following the direction and dip of the vein, which are identical, I found it again displaying itself more to the Southward, and a long way down the declivity. Pursuing this line I encountered pieces of it in a bank near General King's house in Ootacamund; and a little further on it occurs in great abundance, though in fragments, in the bank of a morass, where it assumes an argillaceous character. Notwithstanding that no direct evidence of the vein traversing the Cantonment exists, I am induced to believe these fragments are outlying pieces from it, because they maintain the line of strike with but little deviation. The dip of the Schist, as observed by me at Snowdon, is about 40 degrees to the South West.

The South West slope of the peak is conformable to this angle. The Hill itself is a mass of Syenite, varying from the red rock of Egypt to what has been called Greenstone Syenite, but is really Green Syenite, through the inconstant proportions of the Hornblende it contains, the changing colors of its minerals, and an alteration in the size of their crystals. Northward the Schist terminates at the Trap stairs, but an extension of the latter rock has occasioned those along the ridge to affect the Schistose character in an inconsiderable degree. On the whole I compute I have traced the Schist to a distance of two miles.

This interesting and remarkable vein consists of the following materials.

(*a.*) Siliceous Schist passing into,
(*b.*) Lydian Stone, passing into,
(*c.*) Siliceous Jasper passing into,

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(*d.*) Green Jasper, passing into a brown variety,

(*e*) Siliceous Schist passing into Hornblende Schist,

(*f.*) Ferruginous Clay (A in Macullock's Synopsis of clays,)

(*g.*) The above Clay converted into Porcelain Jasper,

(*h.*) Small Crystals of Sahlite diffused between the joints of an altered Schist.

(*i.*) Traps that have wrought the above mutations, comprising compact Hornblende, Hornstone Trap, and Porphyritic Trap containing green earth in Crystals of Felspar.

(*a.*) The Siliceous Schist has generally a dark greyish color, occasionally almost white. It is a concretion of thin laminæ of quartz, and is very hard except on the weathered surfaces.

(*b.*) The Lydian stone is nothing more than the Schist in a compact state and of darker hue. This is the touchstone of the Goldsmiths.

(*c.*) The Siliceous jasper is the Schist in an altered state, having a dirty white base banded with yellow, green, and brown. Polished, this stone would be an acquisition to the Mineralogical cabinet.

(*d.*) The next jasper possesses a fine green color traversed by stripes of a darker complexion.

Probably it owes its color to the green earth suspended in the contiguous Trap. This jasper is not quite so hard as the preceding variety, its edges are translucent, the fracture is somewhat conchoidal.

It is rare. It passes into a light brown variety with white stripes

(*e.*) With regard to the Hornblende Schist, it would seem that the Trap has parted with a portion of its Hornblende, and by insinuating it between the leaves of the Schist converted it into a kind of Hornblende slate.

(*f.*) Ferruginous clay next comes under our notice.

This indurated clay or wakke, fractures into rectangular and doubly oblique prisms. It has a yellow streak, and is of considerable specific gravity owing to the iron impregnating it, which soils the fingers. Where this clay has come in immediate contact with the Trap it has been altered into a Porcelain jasper (*g*) of a light

fawn color, with white, black, and dark brown spots and streaks. Phillips calls this mineral Porcellanite, and does not consider it a true jasper. It has the appearance of baked clay.

(*h*.) The crystals of Sahlite (a variety of Augite) being partially decomposed, have lost much of their original character, the primary form of crystallization and the green colour however still remain. The longer axes of all the crystals maintain the same direction in the gangue.

A particular notice of the Traps is deferred to a succeeding paper.

Having thus described the materials composing and combined with the vein of Siliceous Schist, I will endeavour to account for its origin and singular conditions.

It is easy to conceive, at some remote period in the Geological era, that the primary rocks by some internal convulsion were rent into fissures and chasms, subsequently filled, as in the present instance, by Trap, and Siliceous Schist, &c.; but it is more difficult at once to determine whether the Trap in its passage through the chasm converted the sides of it (under present circumstances consisting of Syenite) into the Schist, or to pronounce whether the Siliceous Schist was in the first instance injected from below in a mass of soft matter, subsequently partially indurated by time and altered by Trap afterwards.

In other words to decide whether the Trap is of contemporaneous origin with the Schist, or the Schist older than the Trap.

In favor of the first hypothesis is the important fact that the sides of the chasm in the Syenite (exposed in a mass of rock cropping out from the side of the Hill) affect the Sehistose structure: while on the other hand is the following evidence in support of the theory, that the Trap must be of more recent origin than the Schist, viz, its passage through that rock and the alteration it has produced in converting it into jaspers.

These two views are so equally balanced that it is impossible to decide in favor of either of them, to the utter exclusion of the other. I therefore come to the conclusion that the chasm was first filled with Siliceous Schist, and the Trap afterwards obtruded

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through it, and against the Syenite imparting to the latter a Schistose character.

Taking a general view of the subject, I also conceive the chasms and fissures opened in the crust of the earth, were the ducts through which the waters that at different periods deluged it, found their way to the surface.

It is not impossible, either, that the Siliceous Schist owes its origin to contemporaneous circumstances, being a sediment from the muddy waters that passed through the fissure near the conclusion of a cataclyson.

Further examinations of these Rocks have confirmed the idea of the Trap being more recent than the vein of Schist.

It may be seen traversing the latter in various directions, contorting it in a most remarkable manner. In some sections the Trap has the contour of a wedge, confessing it has inserted itself into a fissure.

Latterly renewing my researches along the ridge below Snowdon, I found the same Trap vein that intersects the Siliceous Schist, bursting through the sequestered bank of one of the horse shoe hollows met with in the acclivity of the ridge.

Instead of compact Hornblende I found it now under the form of Basalt (compact Felspar and Hornblende aggregated, with brilliant Crystals of Augite) which when fractured presented very sharp edges.

Some convulsion subsequent to its projection had split the vein of Basalt into two masses, one of which, fallen against the other rested upon it, forming a natural arch between the two, Schistose, quartz, and Jaspery rocks, were associated with the Basalt, and confusedly blended with it in the mass, confirming my view of the passage of the Trap through the Quartz Schist.

The surfaces of the Basalt had assumed a puce color in many places.

Scattered around the base of the vein I observed a few pentagonal basaltic blocks, mixed with fragments of jasper, Schist

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porphyries, and Lydian stone; some of these I collected and present a list of:

1, Jasper marked with red waves on a white ground, passing into green and red.

2. Lydian stone traversed by veins of variously coloured Porphyry, from brown to grey, environing chrystals of Felspar, Amygdaloidal aggregations of Felspar, and dark green quartz, dusted with pulverulent chrystals of Augite. The base of the Porphyry is an indurated clay, having a streaky, almost fibrous structure, and occasionally an Agate figuring.

3. Red Porphyry enveloping the same minerals as the former and travering quartzose blocks.

4. Schist with iron inserted between its leaves (this occurs in transported masses West of Snowdon).

Quitting the Basalt I proceeded along the ridge, and found it consisted chiefly of Syenite with protruding massses of garnet rock along its Western side. I broke out of one of these pieces a garnet an inch in diameter.

From some of the Syenitic blocks in this locality, project serrated ridges of Quartz the crests of Quartz veins. They furnish good indications of the original capacities of the blocks, the ingredients of which have decomposed and disappeared, leaving the Quartz standing out. Nearly at the bottom of the ridge, where it meets the terre-plein of the valley, terminations of masses of Syenite project through the side of the Hill.

Piled on each other they form natural caverns.

The declination of the lateral natural joints of these rocks (for they are generally split into prismatic blocks) at an angle seldom under 25° from the horizontal line, is a remarkable feature in the Geology of this valley, and the fact receives an accession of interest when we find the interior slopes of the eminences flanking it conformable to this dip, and remember we have seen the Schist and Traps preserving the same declination. The expression dip, is perhaps inadmissable when speaking of un-stratified rocks, but there is no other that so well describes the slanting direction of rocks whose lateral lines of cleavage are not horizontal.

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I have said that the Basalt appears in the bank of a horse-shoe hollow, in a ridge branching from Snowdon. These hollows are very common along the sides of the hills. They are distinct from the ravines, the origin of which is due to the degrading operation of running water, as well as from land slips, and I am disposed to consider them as excavations wrought by the action of eddies in those torrents that scooped out the contiguous vallies.

In the neighbourhood of these hollows, traversing a mass of Syenite, is a Pegmatite consisting of large chrystals of Felspar concreted, and traversed with plates of Prase Quartz. Between the Chrystals of Felspar very delicate dendritic stains of oxide of manganese occur.

In taking leave of the subject of the Schist, to describe which has been the paramount object of this portion of the paper, I have to add that transported pieces of it occur in the valley to the West of Snowdon, associated with numerous blocks of common syenite, green syenite, and garnet rock.

A variety of metalloidal diallage occurs in this locality: this mineral has a silky shining lustre in one direction, is of a reddish brown color, sometimes greenish and like bronze, and has a lamellar structure with indications of a prismatic primary form. Under the Blow Pipe, *per se*, it loses its color, becoming black and more compact; with borax fuses into a green glass bead. Streak grey; yields easily to the knife; contains a small proportion of oxide of iron. Resembles, in some respect or other, Hypersthene (Labrador Hornblende) Schillerspar, and Bronzite, all Diallages.

Returning from the heights above Snowdon to Ootacamund, one is struck with a resemblance of the bason in which the Cantonment stands, to the crater of a volcano in a state of repose, but this notion is entirely unsupported by facts, as there is nothing to shew that one ever existed,

Having accomplished my survey of Snowdon, the peak of which is now almost always enveloped in a mantle of mist, I addressed myself to investigate the character of the rocks of the amphitheatre of which it forms one arm.

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This highly picturesque hollow is furrowed by subordinate vallies, separated from each other by buttresses of rock projecting boldly into the arena, and descending precipitously into the valley below.

In many places these crags are almost inaccessible. The intervening vallies are cut by ravines formed by running streams, whose banks are thickly wooded, and afford shelter to elk, wild sheep, black panthers, and other denizens of the forest.

The confluence of these streams, at a point a considerable distance down the valley, is the spot from which the scenery of the amphitheatre is most striking. Thence the united waters pursue their course towards the margin of the Hills, descending in cascades, and cataracts, till they reach the precipice, over which they must be cast in a magnificent volume of water ; the case, I suppose, with all the streams that fertilize the vallies here.

The buttresses which seem to support the amphitheatre, slant out of the perpendicular at a considerable angle to the southward ; in other words their horizontal lines of cleavage, or the bases of their prisms, have been elevated on the north side by a force from below, which operated prior to the excavation of the amphitheatre, and subjacent valley.

The rocks of these buttresses consist of :—

1st.—Compact Felspar, Quartz, and Mica, closely aggregated, and presenting a red color when fractured. With a view to obviate the necessity of constantly mentioning the ingredients of a rock when speaking of it, I take the liberty of specifying such varieties as have not yet been distinguished by any appellation.

Accordingly I bestow upon this rock the name of red compact granite.

2nd.—Compact, Felspar, Quartz. and Mica. of a greenish colour, With equal propriety this may be designated green compact granite.

By the addition of hornblende it would pass into green syenite.

3rd.—The same ingredients, but presenting a white color when fractured. In this rock the Quartz is arranged in plates parallel

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to each other, and to the transverse joints. The rock on its weathered surfaces is of a white color, and the laminæ of Quartz are more distinctly seen.

4th, 5th, 6th.—Red, white, and green compact granites, containing garnets. These rocks are extensively diffused in the neighbourhood of Dodabett.

Compact Felspar enters so largely into the rocks of these Hills, that I am actuated to subjoin a list of those I have met with containing it.

1st.—White Syenite, being nearly all compact Felspar with a few grains of Quartz, and Hornblende, disseminated : the edges of this rock when fractured are sharp and highly translucent—it is occasionally striated with Hornblende.

2nd.—It passes into red syenite with the same ingredients. An opinion has recently been started, that the Logan Stones common in Britain, are not the works of the Druids, and ancient inhabitants ; but the result of decomposition. I have now before me a natural model in red Syenite, of one of those stones, which I found near Snowdon.

It contributes greatly to sustain the new theory relative to the origin of the Logan Stones.

The red syenite when decomposing has its surface traversed by cracks intersecting each other.

3rd.—Brown syenite of the same ingredients and sometimes containing common Felspar.

4th.—Green syenite, the same ingredients with a highly crystalline texture, both large grained and fine. This rock has been improperly called green stone, and green stone syenite, the misapprehension arising from its color. It is of very common occurrence.

In some pieces I found at Kulhutty on my way up the Ghaut, Cinnamon stone, and Smaragdite occur, garnets are also found embedded.

The rounded summits of the Hills in the neighbourhood of Ootacamund, are occasioned by the concentric exfoliation of this rock,

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which has a conchoidal fracture ; is very sonorous, ringing loudly under the hammer, which rebounds from it. Its green color is derived from the Quartz. By the disappearance of Quartz this stone passes into—

5th.—Green stone consisting of compact Felspar and Hornblende. This is known as Whinstone in Scotland. It is of a blackish grey color and one of the most common overlying rocks. Occasionally it has phonolite as a base. It passes into—

6th.—Basalt of which I have observed three varieties, viz.—Compact Felspar and Hornblende, so closely aggregated as to give the rock the appearance of an uniform mass.

The same ingredients as the preceding, containing dull, crystals of Hornblende.

The same rock, containing brilliant crystals of Hornblende and Augite : the latter recognizable by their pyramidal terminations. These Basalts have a dark blue-grey color.

The Smaragdite found in the green syenite is a diallage of a fine green color, and pearly lustre in one direction, having a lamellar structure, and fusing with much difficulty (after hardening into a dark greenish enamel), with borax, into a beautiful amber bead.

The term Smaragdite to me seems attended with some inconvenience, inasmuch as this stone may be confounded with the expression " Smaragd"—the German name for the beryl and emerald.

To return to the amphitheatre, its eastern arm, the peak opposite Snowdon, consists of compact granite containing garnets, which I shall hereafter, for a reason previously assigned, denominate garnet rock.

It is traversed by veins of Quartz, and shelves down almost perpendicularly from the summit, in escarpes to the north and east.

Between this peak and the north flank of Dodabett, the garnet is found in great abundance in rocks protruding through the surface, in detached blocks of red compact granite which affect the Dodecahedral form, the primary crystal of the garnet, and in a conglomerate. The surface of the ground is actually reddened from comminuted garnets. Many of the rocks are traversed by

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veins of Quartz loaded with garnets, some in an entire state, and others run into a mass, manifesting that the Quartz in a liquid state traversed the garnet rock, and in its passage through it, caught up the garnets, vitrifying many of them.

Detached pieces of these veins are scattered on the surface, and present a cellular form, owing to the garnets having decomposed and fallen out. The black garnet occurs, though rarely, in this locality. Amongst other specimens I collected here are.

A stone consisting wholly of very small dark red garnets aggregated.

An ochreous scaly iron ore found in fissures of the garnet rock, being an aggregation of thin orange yellow scales, dull in one direction and presenting a waxy lustre in the other. The numerous plates intersecting and lying on each other give the specimen a striated aspect. On being touched by the finger, the scales adhere to it and soil strongly. Touch meagre. The mineral is a peroxide of iron. It is associated with shining scales of another iron ore.

The garnet conglomerate has a matrix of indurated clay, in color varying from lead blue to a dirty yellow. It includes numerous Garnets and fragments of Quartz and Felspar.

This conglomerate is accompanied by a Breccia, having a similar base enclosing angular fragments of white and Amethystine Quartz, pieces of Felspar, and red blotches, evidently the remains of decomposed garnets.

The very frequent association of garnets with iron, in connection with the extensive diffusion of these minerals on the Neilgheries, is a subject worthy of attentive consideration. At present I have before me a piece of Quartz vein broken out of a rock full of iron, for the sake of a remarkably fine carbuncle (precious garnet) embedded. The Quartz is entirely crystalline the result of slow cooling, and is of various colors due to the contiguous iron. Carbuncles of different sizes, from an inch in diameter to such as are objects for the microscope, are included in the Quartz, having their edges and angles so fused and run into clots, as to obliterate, the crystalline form. Empty geodes in the Quartz, the concavities of which are impressed with marks, and indentations, correspond-

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ing to the configuration of the adjoining altered garnets, also occur. From these appearances, it would seem, that the garnets, their surfaces being previously fused by heat, were submerged in melted Quartz that had lost tne amount of caloric adequate for their further fusion and was beginning to crystallize. In this instance I apprehend the garnets were projected from below, along with their matrix. In many cases however I am of opinion that cavities in Quartz veins form natural alembics (like the geodes in volcanic rocks enclosing zeolite minerals), in which electrical or other powerful natural agents operate to produce garnets; the ingredients silica alumina, iron manganese, &c. being derived from the adjoining rock.

In proof of this latter surmise I may mention that I have garnets in my possession containing small crystals of Quartz, which fell from the sides of the cavities into the mineral while it was in a fluid state.

Returning from the garnet valley, I found my way back to the Cantonment over a route totally different, entering Ootacamund by descending a hill immediately behind Dr. Wight's house: this eminence seen from the Cantonment has a conical appearance but its real shape is the frustrum of a pyramid.

Garnet Rock is its base, overlaid by iron which occurs under the following conditions.

(*a.*) Encrusting a rock probably the same as the base of the Hill, but now hastening into a crumbling sandstone from the absence of the compact Felspar that cemented it. The surface of this rock is cavernous, and possesses a decayed appearance. The iron has followed the exact configuration of it, however and entirely coated its exterior, manifesting that decay had commenced to take place prior to its being invested by the iron.

(*b.*) As iron mica diffused throughout the interior of the same rock.

(*c.*) In veins traversing the rock.

(*d.*) In veins running down the side of the Hill, and embedded in the soil.

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(*e*.) In masses dispersed over the surface, and consisting of aggregated crystals.

From these effects I induce the following history of this ore.

(*a*.) First a vein of iron came to the surface through the body of the Hill, and overran the rocks upon it.

(*b*.) It percolated through the pores of the decaying rock and crystallized into iron mica.

(*c*.) Where fissures existed in the rock the iron formed veins.

(*d*.) Overflowing the surface of the Hill the metal ran down its sides in thin streams, and lastly.

(*e*.) In concavities of the surface the molten iron settled, and by the process of slow cooling crystallized.

The soil having subsequently degraded from around the masses of the metal, left them exposed on the surface.

Some of the out lying fragments of the ore contain cells lined with crystals of quartz.

Pieces of the ore also occur with botry oidal surfaces, hollow inside; these have been evidently crusts of a rock which has disintegrated from beneath them.

Oxydulous Iron (native loadstone) some pieces powerful enough to raise a needle, and Ferruginous quartz are associated with this ore, of which I now annex a mineralogical definition.

Regularly Crystallized Iron Glance, which Griffin includes under the head of red Hœmatite, Phillips separates one from the other, and calls the ore Specular iron *specific gravity* 4·28 which is 0·72 under that of Elba, a discrepancy arising I conjecture from the number of cells in the Neilgherry ore filled with earthy matter.

Primary Crystal.—Acute rhomboid. *Hardness*—between quartz and Felspar. *Streak red. Chemical analysis* proves it to be a peroxide. *Magnet* acts on its dust. *Color*—dark steel grey. *Lustre* highly metallic, and sometimes tarnished.

The Hill on which the above ore occurs, is separated from the North West flank of Dodabett by a stream and road.

In the surface of the latter, Doctor Burrell found the same

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ore under the form of alluvial pebbles, which I apprehend were thrown up from the bed of the stream at the time the road was made.

Doctor Burrell also discovered here a variety of the iron ore which I shall immediately describe.

This excited us to prosecute our researches, and in the sequel we found on the same side of Dodabett, occurring in heaps where clearings had been made in the jungle, and protruding through the surface in blocks, the following remarkably beautiful ore of iron.

Splendent Scaly Iron Glance.—Variety of red hæmatite. Color in the darker varieties deep purple, and violet, with scales of a brilliant yellow; iridescences of blue, red, brown, and gold occur in the lighter kind. These colours slightly fade after the ore has been broken several days.

Structure.—Massive and scaly, the scales possessing the form of octahedral, pentagonal, and irregularly shaped plates, the rhomboid however is the primary crystal afforded by these scales when fractured.

The scales readily separate from the matrix and are very brittle.

Dust—In the lighter varieties yellowish red which stains the fingers.

Cherry red in the darker.

Chemical analysis.—I found this ore to be an hydrate of the peroxide of iron.

Under the blow pipe the spangles of the lighter variety of the ore, yielded after scintillation and ebullition a scale of pure iron. The darker variety, almost as soon as the reducing flame has been applied, yields a similar result.

With borax a bottle green glass is obtained which retains its color while hot, but fades entirely on cooling.

Berzelius, speaking of this phenomenon, states that it arises in the reduction of the peroxide of iron to the state of the protoxide. With soda the ore gives a red bead.

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Lustre.—Some of the scales possess the lustre of the adamant when the light falls upon them.

Nearly all reflect objects passing in front.

In the middle of some of the blocks nodules of the same ore occur in a decomposing state.

In the lighter variety almandines of inconsiderable dimensions are occasionally embedded.

Pisiform iron ore is found in many of the banks about the Cantonment, under the vegetable soil, in rounded grains from the size of a pea to a pin's head,

This mineral is an oxide of iron. Yields water in the mattrass. Its dust is taken up by the magnet.

Structure amorphous though some of the grains peel in concentric coats.

This ore is distinct from the radiated pea iron ore, which the roads are made of at Madras, and which I believe is called laterite, a vague term, not found in any works on mineralogy, and made use of to denote any outlying iron whose mineralogical place is undetermined.

Many of the detached masses of decomposing rock into the composition of which iron largely entered are wholly encrusted with a mamillary coat of oxide of iron. The iron of the rock probably decomposing the water in the air that came in contact with its surface, separated its elements, liberating the hydrogen, and combining with the oxygen.

Amidst the heaps of red hæmatite on the side of Dodabett, I met with blocks of sand stone traversed by thread veins of iron.

This stone fractures into doubly oblique prisms, the longer side being parallel to the metallic veins. It is quite adventitious I suspect, and is a compact grantte altered by the metal that has traversed it.

Iron earths of red and brown colors occur in the same locality.

The blocks of hæmatite are intersected by veins of crystalline rose, prase, yellow and amethystine quarts, embedding carbuncles. The assays of the foregoing irons are not yet completed.

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A stratum of chlorite schist crops out on the surface of the Hill, where the specular and octahedral iron ores occur. It has a dip of about 45 degrees to the Northward.

On the South declivity of the hill, in a pathway leading to Dr. Wight's house, two distinct layers of it apart from each other appear which if taken as margins of the whole bed, would afford a thickness to it of about 14 feet.

It is connected with garnet rock and stratified quartz, which I believe to be distinct from the vein quartz and to belong to the quartz rock of the metamorphic series.

The chlorite schist occurs in the following forms.

1. Green chlorite schist a concretion of foliated chlorite, having a pearly lustre and a highly saponaceous feel. It is soft to the nail, and wants elasticity: the last three qualities distinguished it from mica, which has but 9 per cent of magnesia while this possesses 27.

Examined with the microscope it presents the appearance of numerous small glistening scales. It loses its color before the blow pipe and is fused with difficulty.

Some specimens emit an earthy smell when breathed upon.

2. Chlorite schist. A green slaby homogeneous base, embedding black shining scales of mica and small plates of green chlorite.

3. Quartz and chlorite alternately laminated.

4. Asbestiform chlorite schist, a base of foliated silky white chlorite including scales of mica.

The discovery of chlorite schist, argillaceous schist, hornblende schist, and of what I have every cause to believe, metamorphic quartz rock, although in inconsiderable quantities, has satisfactorily established *the presence of the metamorphic or Primary stratified Rocks on the Neilgherries.*

I am very sanguine that gneiss and true Mica slate will shortly be found.

In cavities of the outlaying quartz geodes are met with con-

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taining six sided prisms of the same mineral with pyramidal terminations.

Dodabett is the highest eminence of a group of hills, the part cf a chain which traversing the Neilgherries, preserves about a North East and South Westerly direction.

The longer axis of the hills comprising the group, are parallel to the direction of the chain, and these hills are connected transversely by subordinate ridges.

From Dodabett, spurs shoot out in every direction and shape, their summits, however generally maintaining a rounded form. The computed height of Dodabett is, 8,760 feet above the level of the sea, an elevation conjectured by some to be only inferior to that of the Himalayas with respect to the relative mountain altitudes of the Indian Peninsula. I cannot however concur in this view.

Standing on the summit of Dodabett, and looking to the south, I can discern a mountain range far away which seems to be at least on a level with my own position. Taking this into consideration as well as the non-existence of any material amount of refraction in the clear atmosphere prevailing in these elevated regions, I am led to conclude that the distant mountain is about as much elevated above Dodabett as its base is below a tangent set off from the earth's circumference at the point where Dodabett rises from it.

Dodabett is so thickly covered with vegetation and soils, that the geology of it is almost inaccessible, for which reason I can say little more than that a mass of garnet and granite rocks has been traversed by traps. Near the Southern extremity of Dodabett, at a remote period some convulsion separated the mountain from the chain it belongs to, and left a deep incision. Advantage has been taken of this *hiatus* in constructing the road from Coonoor to Ootacamund.

The rocks on both sides of the pass are identically the same, and the configuration of the opposite precipices confirms the fact. A list of the rocks and minerals noticed in Dodabett is subjoined.

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ROCKS.

1. Large grained granite consisting of Felspar, quartz, and black mica.

2. Compact granites.

3. Decayed granite of Felspar and quartz with rifts throughout the mass which probably once contained mica.

4. A granite consisting of quartz and Felspar.

5. Garnet rock sometimes occurring in columnar masses.

6 and 7. Syenites of various hues, and green stone.

The following interesting varieties of overlying rocks occur in outlying masses near the pass above alluded to.

8. A combination of compact Felspar, quartz, white mica, and hornblende; associated with.

9. A combination of opalescent, and amethystine quartz, mica, garnets and Cinnamon stone.

10. A combination of Amethystine quartz, common quartz, pearly white Felspar, black and gold coloured mica, Cinnamon stone, and green hornblende.

The three last rocks are remarkably beautiful.

11. Common Felspar and hornblende.

MINERALS.

1. In some stratified blue quartz accompanying common garnets, occurs a garnet of remarkable and unusual form, being a six-sided prism with terminations of three sided pyramids. Notwithstanding its prismatic structure the crystal like the common garnet retains twelve rhomboids.

No molecular replacement will account for this deviation from the characteristic form of the garnet, and I can only imagine two garnets to have united. Some of the crystals of this mineral are tinged with a smoky blue colour.

2. *Idocrase* which occurs in Syenite.

3. Hyperstheme occurs in the rock marked 4 in the preceding catalogue.

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4. A Felspar of a deep green color, in appearance approximating to the beautiful variety called Amazon stone.

5. Blueish green Felspar with white stripes (probably cracks) presenting in one direction a highly shining pearly lustre, and occasionally opalescent like Labrador.

6. Calcedony of white, yellow, green and blue colors; stalactitic, dendritic, botryoidal, and massive in shape, lining the geodes of cellular ferruginous quartz; accompanying.

7. Hyalite investing the sides of an empty geode.

8. In the same quartz, lining geodes occur microscopical and very brilliant prismatic crystals of some ore of iron, but so small as to baffle analysis, probably limonite.

9. Red iron ore,—a mineral extensively diffused in the neighbourhood of Ootacamund and upon Dodabett, occurs in every stage of decay downwards to a red iron earth.

In one stage of this progress it presents the appearance of common red brick.

I shall take some pains to describe this mineral upon which the appellation of laterite has been also bestowed.

It is of a red brick color, full of small cavities which probably once held scales of oxide of iron. Is brittle. Is a combination of silica, water and iron; the iron being a peroxide occasionally blended with protoxide when the stone becomes magnetic.

In some specimens metallic grains may be distinctly seen with the lens. Before the blow-pipe after roasting, the result is taken up by the magnet; with borax gives the fading green color which denotes peroxide of iron. In the bulb tube disengages water. Upwards this ore may be traced through different specimens to the scaly oxide of iron lamellated with quartz.

The iron ore of these Hills occurs in various curiously shaped forms, viz.

Tubular, botroyoidal, mammillary, cavernous, in veins traversing quartz which it alters to sandstone, in hollow balls, &c.

10. Pisiform iron conglomerate an aggregation of the pea iron ore described before, and which I should have mentioned contains

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so much iron that several of the peas will attach to each other in a string depending from the magnet.

11. Red iron glance in pyramidal concretions.

12. Variety of reddle resembling rouge (undescribed.) Has a red streak and reddens paper like red chalk. Is very soft and easily shaped by the knife. Structure lamellar, and easily separated into thin plates. Lustre shining. Becomes black and metallic after roasting when it is taken up by the magnet. Is a combination of iron, oxygen, water-silica, and alumina.

13. Sulphuret of iron three varieties.

Var. 1st. Color different shades of grey. Dull, but fractured surfaces present a white metallic lustre.

In the matrass gives off fumes which possess the odour of sulphur, and sublime on the neck of the tube. The result after roasting is raised by the magnet. Somewhat resembles white pyrites. Occurs in a rock of green syenite accompanied by the following—

Var. 2nd. Externally resembles sulphur; of a yellow color, very brittle. When rubbed between the fingers leaves a sulphurous smell. Roasted it evolves sulphur and leaves a metallic scoria acted on by the magnet.

Var. 3rd. Investing the foregoing which it resembles in every respect except color which is a greenish brown. After very careful examination I could detect no arsenic in any of the foregoing sulphurets.

14. A green iron ore of which I can find no description in the works of the English and German mineralogists. It bears a considerable affinity to those varieties of talc described by Gruner and Vauq as containing 25 per cent. of oxide of iron. Has a shining pearly lustre. Color a beautiful apple green changing according to the position the mineral is held in. Structure micaceous. Occurs in flat hexagonal prisms, the angles of which are obliterated and amorphous. Is soft and unctuous. No action takes place in muriatic acid, though a feeble effervesence is perceptible when the mineral in powder is immersed in sulphuric acid. Gives of water in the bulb tube. After submission to the reducing flame

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for a considerable time the result is acted on by the magnet. Tinges borax the color indicative of iron. This mineral occurs with the variety of reddle, in a rock consisting of green felspar, and blue quartz.

In the course of a ride to Coonoor I had an opportunity of adding another to the list of geological causes that, degrading mountains and filling up valleys, have contributed so largely to alter the conformation of the face of our planet. The discovery likewise enabled me to account for the singularly polished and smoothed surfaces of some of the hills, and eminences I have seen in different parts of India, which had hitherto baffled my penetration. On the side of one of the branches of Dodabett I observed a bluff scarp of rock which projected out of the side of a hill presenting a smooth dark coloured surface suggesting the idea of a slice having been recently cut off it perpendicularly. Proceeding to discover if possible the cause of this phenomenon, I found the whole upright *facade* or face of the rock, some feet in thickness, and many yards high, had actually separated itself from the mass, and in sliding downwards left a bare smooth surface behind it. This *facade* preserving its original contour now rested at an angle against the base of the mass from which it had slid. It was this circumstance that enabled me to arrive at a proper conclusion.

I consider myself fortunate in having made the discovery, apprehending that in most cases the *facade* from its high fall is dashed to pieces on reaching the base of the rock where it lies in a heap of stoney ruins. Water percolating through the pores of the rock, destroying the adherence of the *facade* to the mass, has probably been the agent which achieved the dilapidation.

I can conceive the water to have percolated through upright fissures seated horizontally beside each other—fissures the element may have worn for itself, or it may have disintegrated a stratum of some inconsiderably adhesive mineral connecting the *facade* with the parent mass.

Very few rocks or minerals of interest are met with between Coonoor and Ootacamund, green syenite being the prevailing formation. About a mile however from the bungalow of the former place I found the subjoined minerals.

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Black Manganese ore, combination of manganese, oxygen, water, silica, and iron. Magnetic after roasting. With borax gives a violet bead. In the bulb disengages water. Massive and botryoidal. Leaves a shining streak on paper. Is scratched by the knife and leaves a shining streak under it. Colour—blueish black, opaque. Fracture earthy. *Berthier* states this ore contains 70 per cent. of manganese ; all the ores of this metal afford from 65 to 85 per cent. with the exception of the silicate of manganese which has but 50. When the manganese ore found at Coonoor is dissolved in muriatic acid, and exposed to heat, copious fumes of chlorine are evolved. I failed to obtain a precipitate of sulphate of barytes from the solution, on testing with sulphuric acid, although barytes is usually found in combination with this form of manganese. Accompanying this ore I found that beautiful variety of brown iron ore called, brown hematite, fibrous brown iron ore. *Color*—blackish brown. *Structure*—fibrous and radiating. *Lustre* silky, botryoidal, mammillary, stalactitic. Iridiscences occur in some of the specimens. Brittle.

While speaking of brown iron ore I make the opportunity subserve to describe two varieties I observed near Ootacamund. Stalacmitic brown iron ore (hydrate of iron) arises in a deposit from water strongly impregnated with iron, and is probably the same with the *morasterz* of the Germans though more indurate. Occurs in stalacmitic beds 2-10 of an inch thick in banks below the vegetable soil. To the lower side of these plates, when they are drawn out of the bank, are found small stalactites depending.

This ore is a hydrate of iron with a considerable quantity of allumina and silica. Is raised by the magnet after roasting. Stalactitic brown iron ore (hydrate of iron), about which DeBenza spent so much time and thought in endeavouring to account for its tubular form conceiving the tubes owed their origin to capillary attraction, in other words making the stalactites grow upwards instead of downwards. The stalactite is formed by the percolation of water containing iron. It has long been known as one of the commonest forms of this ore. This mineral is raised by the magnet after roasting.

Jaspery iron—a variety of red iron ore I also now add to the list of the ores of iron.

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Garnet rock and compact red granite again occur near Coonoor; indeed I conjecture that the former rock extends down the Ghauts as far as Cape Comorin, for I observed some years ago that a part of the beach, at that Cape, consisted of very minute garnets arising probably from the disintegration of garnet rock.

Between Coonoor and a ridge emanating from Dodabett, six miles to the north of that place, the conglomerate which I observed accompanying the garnet conglomerate in the garnet valley, is distributed over the face of the country along with red iron ore, and a highly ferraginous conglomerate. The ridge itself is composed of syenite; garnet rock, and eurite, (quartz and felspar.)

Since this paper was first written Dr. Burrell found galena and sulphuret of copper, near Ootakamund, and I discovered silicate of zinc in the same locality.

H. C.

An outline of the Geological History of the Neilgherry Hills. By Major H. Congreve.

In the *molluscs* and *zoophytes* of the Cambrian system, and the corals, *crinoidea*, *crustacea*, *conchifera*, and the *coprolites* or fossil excrement of fishes in the silurian; the two great divisions of the *grauwacke* formation; the clearest testimony is afforded, that a vast ocean rolled its waters over the *metamorphic* rocks immediately beneath this group. The rocks of the metamorphic series, gneiss and hornblende schist chiefly, formed the bottom of this ocean they having been originally granite and syenite, subsequently metamorphosed by pressure and the mechanical and dynamical action of molten-trap rapidly and continuously over them.

The metamorphic rocks have been found in all quarters of the globe, and appear as surface rocks in most countries; but this is not the case with the grauwacke group. And this can only be accounted for by conceiving that, in places where rocks of this series are wanting, the waters of the grauwacke ocean were so turbulent and disturbed as not to admit of any deposit; the materials

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suspended in the element being washed from such sites into more tranquil ones, into basins and hollows in the bottom of the deep, where they have since been covered in by after deposits. Thousands of years hence, when nature through the agency of time, attraction, fire, and water, shall have made the bed of the existing sea dry land, and our Continent the ocean's bed, the missing geological groups may appear with their organic remains of shell-fish, corals, zoophytes, vegetables, and the earliest specimens of organic life, in the same manner as the secondary strata are in our day being discovered in basins and small patches.

At a very remote period in the geological history of our planet, the sea, of which the metamorphic rocks were the bottom, washed over that part of the Indian peninsula where the Neilgherries now stand—at that time not elevated. While the first rudiments of organic life were starting into being in that ocean, some internal convulsion took place, upheaving the mass of syenite forming the main rock of the Neilgherries, and forcing it through the gneiss and hornblende schist at the bottom of the sea; portions of which rocks were simultaneously raised, some to the surface of the plateau, and others upon the flanks, which positions they tenant to this day. The strata of metamorphic rocks round the foot of the Neilgherries are found to dip from the Hills: in other words they were violently disrupted from their horizontal position by the invading mass, forced upwards, and their elevated ends left leaning on the lower sides of the Hills.

The entire absence of the rocks of the grauwacke group on the Neilgherry Hills, while those of the preceding series exist, indicates the elevation of the plateau to have taken place at the time the grauwacke ocean had barely commenced making its deposits. Concealed at present by the vast forests that fringe the foot of the mountain, horizontal strata of the grauwacke rocks may hereafter be discovered reposing on the lower slopes and the inclined metamorphic rocks. But in case they are never found, we shall be compelled to account for their absence in the manner before mentioned.

In its passage through the grauwacke ocean, the ascending

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mass of syenite of the Neilgherries carried upwards with it a large body of water, that had a considerable influence in conveying certain existing features to the configuration of the Neilgherries, which I shall presently consider.

The motion of the ascending syenite may have been oscillatory: vast masses rose from the interior of the planet and almost as soon descended ; in some instances the foundering of these masses took place at their centres, and left basins and funnels. The better to understand this, I request the reader to turn over an hour-glass, and mark the descent of the sand in the shape of a funnel : he will then see in the subsidence of the inside of the incoherent mass, as the sand descends, a partial illustration of my meaning. This oscillatory action did not cease in the syenite until the whole moving mass was completely fixed. Much of the water poured downwards through the funnels. Other volumes of it rolled off the plateau into the ocean below, creating in their descent those deep grooves in the mass, met with on every side of it, and of which the Guzlutty, Segoor, and Coonoor Ghauts, form the most conspicuous examples : their cliffs, many hundred feet in height, and the general extent of these vast chasms, at once dismiss the idea of their excavation being due to the erosive action of the insignificant streams that flow along their bottoms. If a circular piece of paper be drawn with rapidity upwards through a basin of water, its sides will be bent and grooved downwards, affording an illustration of the process by which the deep fissures in the sides of the Neilgherries were originally formed.

The waters having subsided into the depths of the earth, below the plateau, and into the sea surrounding it, left a mass of syenite, which would have presented the appearance of numerous peaks and ridges surrounding hollows and funnels : many of the former may yet be seen, while the latter have been since filled up by invasions of other rocks from below.

Posterior to these events another series of rocks were erupted, of a different character to the preceding, being granite chiefly pegmatite, but rarely that composed of the three minerals, quartz, felspar, and mica ; the felspar in some cases being compact, and

garnets diffused extensively. These granites were projected up the funnels in the syenite, and filled the basins above.

And thus we might account for the occurrence of the syenite in the positions denoted in figure 1st, a—a being syenite, and b—b granite. Pegmatite is found constantly on the Neilgherries capping syenite hills as here represented.

I now arrive at that period in the geological history of these hills, marked by the projection of the trap-rocks. These were injected by subterranean forces into the cracks and fissures that water, converted into steam by the subjacent heat, had created in the rocks in its efforts to find vent. Some of the fissures however were not filled, and may still be seen empty.

First, amongst the trap-rocks or overlying, I class the red iron ore, carelessly designated laterite by some of our geologists, and which I have ascertained to be a combination of silica, alumina, water, and peroxide of iron. This rock is most extensively disseminated on these hills, appearing in overlying masses capping the highest peaks in dykes traversing their sides in veins that have overflowed their elevated vents and escaped down the sides of the hills, and in low rounded hills, all the result of a discharge from below.

Iron enters largely into the composition of the other trap-rocks of the Neilgherries, and it is worthy of observation that in the three great epochs of this history it is found extensively prevailing. In the first period, when the syenite was elevated, iron is found disseminated throughout the different varieties of this rock, combining with silica, magnesia, lime and alumina, to form the hornblende of it. In the second period, at the time of the projection of the granites, we find it in connexion with other minerals entering into the composition of the garnet family, abundant on these hills: cinnamon stone, idocrase, almandine and common garnets, being very frequent. In the trap epoch, iron appears as the red iron ore, a decided trap-rock, and it occurs under different forms as veins traversing the whole series. For a more detailed account of the mineral forms of this metal, I refer the reader to my "additions to the mineralogy and geology of the Neilgherries."

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This constant appearance of the iron whenever a mineral mass has been projected from below, renders it probable that vast quantities of the metal in a molten state lie beneath these hills in subterranean depths, in which laboratories of nature, her hand forms the mineral combinations that are subsequently cast upon the surface.

This point terminates the history of the elevating causes that have produced the plateau known as the Neilgherry Hills.

I shall next consider those which are now operating conversely to reduce these mountains again to their ancient level, and eventually many thousand years hence to blot them out wholly from the map of the earth's crust; carrying their debris far away as the materials for new Continents. Already had the destructive agent, water, commenced its operations, when the creative principle fire was forming the Hills. We have learnt that the *waters* raised by the *fire*, at their recedence, grooved out of the earthy-mass ducts for their own descent, and it is believed that the meeting of these antagonist *elements*, when the waters in part descended through the funnels and fissures in the syenite upon the fires below, led to the partial dissipation of both, and from their destruction arose a third power probably as great as either in producing geological events, viz.

Steam.—The effects of this new agent to expand and release itself from the narrow limits it was confined in, produced many of the rents and crevices, in the plateau, subsequently filled by metals and minerals; while it also shattered the base of the rocky buttresses to an extent, in many cases, adequate to produce such effects as we find below the Khoondah mountains, where vast heaps of peaks lie in the subjacent valley, these peaks having been the summits of the mountains whose bases fell by the explosive action of steam.

More recent deluges excavated during their recedence, the numerous vallies now furrowing the surface of the Hills, and the streams flowing along their channels afterwards contributed to wear away the soil, assisted by heavy rains that washed into their beds portions of the banks of the adjacent eminences. As the

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valley streams progress towards their confluences, large rivers in the low country, the constant action of the running waters undermines the rocky sides of their channels, and the banks in the sequel give way and fall into the current. The comminuted debris of the syenite rocks of the Neilgherries, in the shape of sand carried into the ocean, bears along with it bones and remains of animals now existing, both terrestrial and fluvial; and in after ages some future geologist will perhaps examine petrified fishes, and other marine animals, along with fresh-water shells, vegetables, and perhaps the remains of his fellow-man, in an indurated sand-stone formation, now in progress at the bottom of the ocean, which once composed the materials of the Neilgherry Hills: that is, supposing the ocean bed shall have been upheaved while the present continents subsided, in completion of another of those oscillatory movements that have wrought so many changes in the face of our planet, but on a scale of greater magnitude, and in a space of longer duration than that I have previously alluded to.

The last deluge that visited the Neilgherries has left behind it a thin stratum of gravel, now occupying a position between the vegetable soil and the surface of the clay below it. This gravel has been confounded by some with the decomposing surface of the older rocks. The same flood likewise excavated in the action of its eddies, many of those hollows seen in the sides of the Hills.

Subterranean springs undermining superstrata, have produced instances of the geological phenomena known as "Landslips," the most conspicuous being the well known avalanche. The same element has contributed to wear down precipices by removing the entire façade, which in its descent has highly polished the parent mass behind it. In one instance I have observed the façade leaning against the base of the rock from the face of which it has slid.

Atmospheric agency has largely contributed to wear down the surface of the Neilgherries. The shape of many of the low rounded hills is referable to it, the syenite having exfoliated in concentric layers from their summits. In the course of my examinations of the effects of decomposition upon rocks in this locality, I

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have at first mistaken concave masses in the neighbourhood of larger rocks for separate pieces, but on proceeding to excavate the soil, have discovered them to be merely the concentric coatings of the mass, joined to it below.

The depth to which decomposition has extended is very considerable; in many cases whole hills have been converted from rock into an earthy soil, in which beds of porcelain-clay are frequently met.

There are many other agents at work in degrading the surface such as roots striking into the fissures of rocks, &c. not necessary to mention, because their operations are well known and every where met with. I have enumerated those which I considered of the greatest importance, and have now mentioned, I believe, most of the leading features which would enter into a geological history of the Neilgherries, condensing the subject as much as possible for the readers and for my own sake.

In a more complete account of these Hills, the minor geological details of districts and their mineralogical characters, would be inserted between the different heads. The observations of Dr. DeBenza, and my own papers entitled "Contributions to Indian Geology and Mineralogy," would furnish such particular accounts. The foregoing history of causes that have produced existing effects, is for the most part inductive, being the result of nearly a year's careful study of the prevailing geological state of the Neilgherries.

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XVII.—*Narrikal or Cochin Mud Bank.* By FRANCIS DAY, *Civil Surgeon, Cochin.*

In the last number of the *Madras Quarterly Medical Journal,* page 202, will be found a short notice of a *re-discovery* of a Mud Bank, extending to Narrikal, about six miles north of Cochin. This bank, so close to the shore, so extraordinary, and which might eventually become most useful, appears to have been mysteriously lost sight of by the European residents of the port, and even by practical seamen. It is proposed to trace its history, from the present time backwards to about 84 years ago, when the Dutch were masters of Cochin. If this paper serves no other purpose, it may be instructive, as showing how easily recorded facts are forgotten in India.

The re-discovery of this bank,* dates from May 22nd 1861, when the vessel *John Cobbold,* anchored there : less than three and a half years previously, its existence was observed upon in the small local Journal, in a letter dated February 13th, 1858, in which, it was stated " the shore from thence (Malliapooram) to Palliport, " is protected by a mud bank."

In Lieutenant Selby's elaborate Chart of the Western Coast, dated 1854, it is traced out, as extending from the mouth of the Cranganoor or Aycotta river, to Narrikal. In 1841 it was remarked upon by several Europeans. In *Horsburgh's* East Indian Directory, fifth Edition, 1841, page 512, it is stated under the head of Cranganore Fort :—" From the south point (of the Aycotta or " Cranganoor river) a mud bank with 3 fathoms on it, projects " out near two miles to seaward."

Lieutenant Arthur in 1810 (Records of Travancore 1839) says, " a ledge of rocks is stated,† to strike out from the Coast, for " some distance in the vicinity of Pallypuram (Palliport). A mud " bank lying about 3 miles out at sea parallel to the shore, and

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* See report of the Master Attendant of Cochin dated July 6th, 1861, which enumerates its nautical advantages, and describes its position, &c.

† His report appears an incorrect translation of that of *Stavorinus.*

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"stretching formerly from beyond Allepey, to Porracaad (Porca), "formed a good anchorage where ships in twenty fathoms (feet?) "water, rode secure in all seasons, from the dangers of a sea (lee?) "shore."

Lieutenant Arthur's account is no doubt vague, but on examining it by the translation of the voyages of the celebrated Dutch Navigator Stavorinus it becomes apparent, that he had quoted incorrectly, unaware that two mud banks existed south of Cochin and one to the north.

Stavorinus in 1777 stated the "Coast is safe and clear every- "where along the Company's establishment, except at the mouth "of the river of Cranganore where there is a reef, at the north "side, which stretches out to sea, about three-quarters of a "league; it is called the reef of Ayeotia by our Navigators: be- "fore Coylang (Quilon) there is a similar one but which does not "extend half so far out. South of the abovementioned mouth of "the river of Cranganore, there is a bay, formed by mud banks; "likewise one not far from Porca, and another south of Cochin; "the banks forming which extend full a league out to sea, and "into which vessels may run with safety during the bad monsoon, "and may lie in twenty, and less feet water, almost without an- "chors or cables, in perfect security against the heavy seas, which "then roll in upon this lee-shore, as they break their force upon "the soft mud banks, and within them nothing but a slight mo- "tion is perceived."

From the foregoing it appears that a bay protected by mud banks existed between the mouth of the Cranganoor river towards Cochin in 1777 and then appears to have been well known. At present, the same protected spot exists, but it is no longer a bay, and for the following reason. Though the northern projection of the coast at the mouth of the Cranganoor river, forming the northern extremity of the "mud bay" is still present; the southern projection, or that between Narrikal and the mouth of the Cochin river, is gone, having in fact been covered by the sea: (at this place a church stood, which is now submerged) had it not been so, a "*mud bay*" would still be present. It is curious that this law of encroachments of the sea is now the rule on the Western Coast,

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because tradition* and an examination of the geology of the country, both lead to the conclusion, that the sea formerly washed up to the Western Ghauts; thus Malabar has been literally raised from the sea.

During the south west monsoon, the rivers on the Western Coast swell to a great extent, and become loaded with alluvial deposits. Should any obstruction occur at their outlets, deposits sometimes take place, as at the Cranganoor and Quilon rivers, where mud banks have been so formed. Whether the impediment to the alluvial deposit being carried out to sea, is merely owing to the action of the S. W. monsoon causing a great impetus to the waves as they meet the river at its exit: or whether other causes also obtain, may be questioned. In forming the Narrikal mud bank, a reef of rocks, the Aycotia reef, at the mouth of the Cranganoor river, appears to have prevented the S. W. monsoon from causing a divergence of the river's mouth to the northward, (as invariably takes place on the Western Coast unless that bank is protected)† this reef (Aycotia) has probably assisted in the formation of the Narrikal, or more properly speaking the Cranganoor mud banks.

The whole of the long islands, between the backwater and the sea, are evidently merely alluvial deposits, brought down by the, various rivers, in their course from the Western Ghauts.‡ The direction of these mud banks being the same as the long islands and the character of the soil being similar, demonstrates the causes of their origin to be probably identical. In short the mud banks are alluvial matter, brought down by the rivers and deposited in the sea where it meets the force of the S. W. monsoon.§

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* "In a M. S. S. account of Malabar" says *Hernan Lopez de Castaneda* in 1525 it is said that little more than 2,300 years ago "the sea came up to the foot of the Western Ghauts."

† See *Taylor's* report.

‡ See *Sir Emerson Tennent* on Ceylon.

§ During the S. W. monsoon, the sea for several miles beyond the entrance of the larger rivers is no longer salt.

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Though *Narrikal* owing to its being the nearest place to Cochin is mentioned, the density of the water is greater proceeding towards the Cranganoor river. It becomes very thick and black, and large pieces of flat hard mud begin to be perceived lying on the shore, about one mile north of Narrikal, having been thrown up by the sea. Passing on towards Cranganoor, a large bank of the same substance exists, evidently brought down by the river, and this is one source, from which the mud bay receives a fresh supply.

Every little stream, and every little gully, is an excellent miniature representation, of the larger rivers, bringing down alluvial matter. On making sections of the sand, every 200 yards, northward of Narrikal, the same appearances were presented, layers of sand, alternating with layers of alluvial deposit. The larger the stream, the thicker the various layers. No gases arise from the water, nor oily substance (as has been suggested) floats upon it It is simply the action of the sea which prevents the subsidence of the mud, for as soon as placed in a still vessel, it sinks. The shore is sandy, but amongst the sand alluvial deposit exists. The smoothness of the sea is well described by Stavorinus.

It is stated by the fishermen that this part of the coast is very well stocked by the finny tribes, probably owing to the amount of mud, as well as to its sheltered position. It is remarkable to perceive fish of the family *Clupeidæ* of from one to two ounces in weight, jumping out of the water in all directions, on being disturbed by the paddles of the fishermen's boats, whilst Brahminee kites in considerable numbers circle about, watching for or sweeping down on the fish for their prey.

Small specimens of sea snakes, *Hydrophidæ*, are not uncommon, they are reported not to be venomous. On the sea shore at almost every step little light coloured and active tiger beetles *Cicindelidæ* are perceived jumping about. The mud has an unctuous sticky feeling, and is not gritty unless mixed with sand. It is of a very dark greenish colour, has but a slight odour, and subsides in water.,

COCHIN, *5th September* 1861.

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The Mud Bank at Narrikal, near Cochin; its composition, as exhibited by the Microscope. By LIEUT. J. MITCHELL.

In the month of September last a small quantity, about half a cubic inch, of a dark brown earth was sent to me for examination with the microscope. It was said to be a portion of the great Mud Bank at Narrikal on the Western Coast, the existence of which had lately been brought to the notice of Government by Captain John Castor, Master Attendant at Cochin, and of which a notice appeared in the Madras *Times* of the 13th August, 1861.

As this report may have escaped the notice of some of the readers of the *Madras Journal of Literature and Science,* I may say, briefly, that Captain Castor reports the existence of an extensive mud flat, which, commencing about half a mile south of the village of Narrikal extends to the north for about four miles. Within this space, in the height of the S. W. Monsoon, he found the sea without a ripple ! But the greatest stillness of the sea, and the total absence of surf from the beach prevailed between a village named Nairambolum and Narrikal, a distance of about one and a half miles :—at this point Captain Castor was always able to embark from the beach in a small canoe.

The mud appeared to be exceedingly soft and permitted a 7 lb. lead to penetrate it to the depth of three feet in some parts where there was a super-stratum of from six to ten feet of water, and a bamboo penetrated six feet where there was a depth of six feet of water. Beyond the depth of sixteen feet, the bottom attains greater consistence and appears good holding ground. Three miles and a half from the shore the depth was five and a half fathoms and gradually shoaled towards the shore. We are left to conclude that the bank extends to that distance from the shore, but this is not distinctly stated in the published account.

The small quantity sent to me was damp, and appeared very firm and tenacious ; it had however been somewhat compressed by the waterproof wrapper in which it was packed. To ascertain if it contained any minute shells a portion was placed in water, but it did not break up readily, and as I wished to avoid any vio-

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lence that would destroy such delicate structures, I allowed it to soak for twenty-four hours. On shaking it up at the expiration of that time I found that at least half of it could not be separated in that way. I therefore pressed it gently with a glass rod; it resisted the pressure, much in the way that a stiff piece of jelly would do, exhibiting considerable elasticity as well as tenacity, and it is doubtless these properties that enable it to break the force of the waves:—acting like an immense spring, it yields to their pressure, but in the encounter the water loses its force and becomes quiescent, while the mud gently expanding again is ready for a fresh encounter.

When by a good deal of gentle coaxing, it was diffused in the water, it was stirred well in about five inches of water and allowed to stand for half a minute, when all but the last half inch was poured into another beaker and time allowed for both to subside.

The first vessel produced some Foraminifera which I refer to the Genus Rotalina, (D'Orbigny) but doubtfully, as no monograph of the Foraminifera is at present accessible and other works in my possession do not give sufficient information to enable me to speak positively. Besides the Foraminifera there were one or two small pieces of larger shells and some very small angular fragments of quartz.

As much of the water as could be was poured from the second vessel and replaced by strong muriatic acid; this was kept boiling for about three hours, when, after having been allowed to settle, the acid was poured off and an equal quantity of nitric acid added which was kept boiling for about the same time. But as this did not appear to have entirely destroyed the organic matter the deposit was further boiled for four hours in strong sulphuric acid, after which it was washed in several changes of distilled water. There remained, in about equal proportions, Diatomaceæ and some amorphous matter which having resisted all the boiling in acids is probably siliceous.

The following is a list of the Diatomaceæ found in this deposit;—they are arranged in the order observed in the last Edition of Pritchard's Infusoria, which contains the most complete

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description of these minute organisms that has been yet published.

CLASS CRYPTOGAMIA.

SUB GROUP DIATOMEÆ OR DIATOMACEÆ.

FAMILY I.—EUNOTIÆ.

Genus EPITHEMIA (Kutz.)
Epithemia argus (Ehr. Kutz.)
Genus EUNOTIA, (Ehr.)
Eunotia diadema (Ehr.)
Genus HIMANTIDIUM (Ehr.)
Himantidium undulatum (Sm.)

FAMILY IV.—FRAGILARIEÆ

Genus NITZSCHIA (Hass, Sm.)
Nitzschia sigmoidea (Nitzsch. Sm.)
N.——— sigma (Kutz, Sm.)
N.——— lanceolata (Sm.)

FAMILY V.—SURIRELLEÆ.

Genus SYNEDRA (Ehr.)
Synedra (? Sp.)
Genus TRYBLIONELLA (Sm.)
Tryblionella (? Sp.)
Genus. SURIRELLA (Turp. E. S.)
Surirella fastuosa (Ehr.)
Genus CAMPYLODISCUS (Ehr. Men)
Campylodiscus splendida (N. S.)

FAMILY VI.—STRIATELLEÆ.

Genus TABELLARIA (Ehr.)
Tabellaria fenestrata (Lyng. Kutz.)
Genus GRAMMATOPHORA (Ehr.)
Grammatophora marina (Lyng. Kutz.)

FAMILY VII.—MELOSIREÆ.

Genus CYCLOTELLA (Kutz.)
Cyclotella astræa (Ehr. Kutz.)
C.——— (? Sp.)
Genus MELOSIREÆ (Ag.)
Melosira marina ? (Orthosira marina. Sm. ?)

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FAMILY VIII.—COSCINODISCEÆ.

Genus COSCINODISCUS (Ehr.)

Coscinodiscus centralis (Ehr.)

Coscinodiscus Oculus Irides (Ehr.)

C. pectinalis. (N. S.) Disk with irregularly radiating cellules, smallest near the margin; a hyaline border divided into numerous compartments by radiating points. Diamr. 1.625."

C. ———— (? S.) Disk with a central umbilicus of seven elongated cells; cells near the centre and margin smallest. In a dry valve the angles of the hexagonal cells appear punctated at the upper focus. Diamr. 1.500."

C. ———— (? Sp.) Disk with a sub-hexagonal hyaline umbilicus having in the centre about 15 scattered punctæ. Disk divided into numerous zones by punctated lines radiating from the umbilicus; compartments containing 7 rows of parallel punctæ of which the median alone reaches the centre, margin broad, very finely striated. Diamr. about 1.250". This is a very fine diatom, but the specimen observed was broken, so that I am not quite certain about the diameter.

C. ———— (? S.) Disk with smooth hyaline, umbilicus, cells in radiating rows of which some do not reach the centre, marginal cells small, irregular, the cells from the centre half way to the circumference gradually increase in size and have thick walls and an irregular outline, the remainder are large, sharply defined, hexagons. Diamr. 1.300".

Coscinodiscus (? S. or ?) Disk divided into eleven compartments by parallel rows of hexagonal cells of which the median one alone is radial and reaches the centre of the disk, viewed transversely the compartments have the oblique striation of Pleurosigma, margin plain. Eleven short processes with expanded and depressed extremities appear to be attached to the interior of the connecting ring and opposite the centre of each compartment Diamr. 1.375".

Coscinodiscus (? S.) (or ?) Disk divided into 9 triangular zones of parallel cells of which the median rows only reach the centre, zones form a nonagon, of which the angles do not reach the

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circumference of the disk, margin broad and finely striated, internal processes like the last but placed at the *angles* of the polygon instead of the centre of its sides, Diamr. 1.466''.*

Genus HALIONYX (Ehr.)

Halionyx nonarius. N. S. (J. M.)

Disk divided into nine compartments or zones by radiating cellular lines, not equidistant, zones formed of parallel rows of cells of which the median alone reaches the centre, a raised border or rim, marked with delicate, radiating moniliform striæ which are continued some distance inside the margin: their internal boundary not being very distinctly defined. Diamr. 1·600."

Genus ACTINOCYCLUS (Ehr.)

Actinocylus moniliformis (Archer.)

Genus ASTEROMPHALUS (Ehr.)

Asteromphalus flabellatus ? (Breb., Grev.)

Genus ACTINOPTYCHUS (Ehr.)

Actinoptychus undulatus, (Kutz.)

A. ———— quaternarius (Ehr.)

FAMILY X.—BIDDULPHIEÆ.

Genus BIDDULPHIA (Gray.)

Biddulphia Baylii (W. Sm.)

Genus ZYGOCEROS (Ehr.)

Zygoceros rhombus (Ehr.)

FAMILY XI.—ANGULIFEREÆ.

Genus TRICERATIUM (Ehr.)

Triceratium favus, (Ehr.)

FAMILY XIII.—CHÆTOCEREÆ.

Genus, BACTERIASTRUM (Shadbolt.)

Bacteriastrum nodulosum (Shadb.)

FAMILY XIV.—COCCONEIDEÆ.

Genus COCCONEIS, (Ehr.)

Cocconeis crebrestriata (Grev.)

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* NOTE.—I have left the last 6 species in this Genus for the present, but it is doubtful if they can all be retained there. The two last should probably be included in the next Genus.

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FAMILY XVI.—CYMBELLEÆ.

Genus CYMBELLA (Ag. Kutz.)

Cymbella Ehrenberghii, (Kutz.)

C. —— maxima (Nag,)

Genus AMPHORA (Ehr.)

Amphora costata, (Sm.)

A. —— spectabilis (Greg.)

Genus GOMPHONEMA (Ag.)

Gomphonema (? Sp.) I cannot identify this with any described species, but as I have not seen a front view I leave it unnamed. It is very like some Naviculeæ, but as the two halves of the valve differ in form it is undoubtedly a Gomphonema. Its moniliform striation is beautifully distinct.

FAMILY XVIII.—NAVICULEÆ.

Genus NAVICULA. (Bory, Rab.)

Navicula didyma (Ehr. Kutz.)

N——— Hennedyi (Sm.)

N——— birostrata (Greg.)

N——— rhombica (Ehr.)

N——— formosa (Greg.)

N——— distans (Sm.) Pinnularia distans. S. B. D. 1. P, 56. P. 18.169.

N——— elliptica (Kutz.)

N——— patula (Sm.)

N——— rectangula'a (Greg.)

N——— firma. (Kutz.)

N——— cyprinis

N——— Castorii. N. S. (J. M.) valve broadly elliptic with sub-acute extremities, twice as long as broad, striæ, moniliform, parallel, 23 in. 1.1000", not quite reaching the median line; a small smooth transverse median fascia;—median line somewhat curved near the extremities, length 1.370".

I have dedicated this fine spices to Captain Castor the Master Attendant at Cochin, to whom we are indebted for the knowledge of this extensive deposit.

N——— (? Sp.) Valve rhomboido—lanceolate, with a scarcely perceptible contraction near the broad rounded extremities. Striæ

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moniliform, not quite reaching the median line, a smooth median fascia continued into the marginal striæ by four unequal wedge shaped spaces, two on each side, striæ 21 in. 1.1000."

Navicula——(? Sp.)

Broadly lanceolate, the extremities gradually contracted into somewhat obtuse beaks, longitudinal striæ strongly marked, 28 to 1.1000," Transverse striæ rather obscure, requiring oblique illumination, 32 to 1.1000"—length 1.120." This may be N. Indica but the description* is too meagre for identification.

Genus STAURONEIS (Ehr. K.)

Stauroneis aspera (Ehr. Kutz.)

S———— (? Sp.) small, acutely rhomboidal, stauros narrow, reaching the margin, striæ inconspicuous. Length 1.390."

Genus PLEUROSIGMA (Smith. Gyrosigma, Hassall.)

Pleurosigma Æstuarii? (Breb. Sm.)

P———— balticum (Ehr. Sm.)

P———— intermedium? (Sm.

P———— strigilis? (Sm.)

P———— inflatum (Shadbolt.)

FAMILY XIX.—ACTINISCEÆ.

Genus DICTYOCHA (Ehr.)

Dictyocha Epiodon (Ehr.)

Genus MESOCENA, (Ehr.)

Mesocena octogona (Ehr.)

M——— binonaria (Ehr.)

The foregoing list contains in all sixty-two species, belonging to thirty Genera; some of those I have described are probably new to Science, but in the absence of authenticated specimens or even drawings of, nearly all, the species foreign to Great Britain, I have considered it prudent to leave them unnamed, and whenever I have had any doubt of the identy of a species I have signified it by adding a note of interrogation.

It is probable that when I have had time to examime the larger supply lately received, and for which I am indebted to the kindness of Captain Castor, that the number of species will be at least

* NOTE.—Of that species in Pritchard's Infusoria.

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doubled, for the Narrikal Mud-Bank is undoubtedly a rich Diatomaceaus deposit and will well reward any one who has sufficient leisure to examine it thoroughly.

I said in the commencement of this paper that the earth had a dark brown colour, but that received since, and which is quite wet has a somewhat greenish tinge, the colour in fact depends upon the quantity of water present. Some that I exposed for several days to the sun became almost white, but I have not ascertained to what this colour is due for it was unfortunately caught in a shower, and the process of drying has to be repeated when the weather permits.

XVIII.—*Schriften der Königlichen Physikalish-Oekonomischen Gesellschaft Zu Königsberg*, Nos. I and II.

We have to acknowledge with thanks the first two numbers of the Journal of the Royal Physical and Economic Society of East Prussia, established in the ancient city of Königsberg, which has so lately attracted visitors from all parts of Europe to witness the Coronation of King William the 1st.

This Society had its origin in the year 1789 in the proposal of two Government officials in East Prussia to form an Association for the improvement of Agriculture: the idea was caught up, and the Society receiving the Royal patronage was founded in the year 1790, under its present name. It continued in full operation until the foreign occupation consequent on the disastrous overthrow at Jena, during which it was suppressed by the French, and remained dormant till the close of the year 1813; at which period it was reconstituted and obtained an accession of very able men, such as Hagen, Bessel, Müller, Burdach, Gaspari and others.

Its character now underwent a change, and from an Agricultural and Geological Society, it became one of Science generally. Thus we see the illustrious Bessel reading his first Essay on Cometary Orbits before the Society in 1816. Amongst the Presidents of the Association we notice the names of Professors Eisenhardt, Meyer, Dove and Zaddach, all well known throughout Europe as true philosophers and sound scholars.

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In the political disturbances of 1848-49 the Society came under the clutches of the Police, and its meetings became less frequent and finally ceased; but at length in March 1860 it came to life once more, and we have the best evidence of its vitality in the two numbers of its Journal, published in September 1860 and March 1861, which form the heading of this article. The Society consists almost entirely of men of Science, College professors, and makers of mathematical and optical instruments.

The contents of the two numbers alluded to are very interesting to the lovers of Science generally. In the first number there is a capital description of Amber, a substance well known to most of our readers, yet never before subjected to an accurate and exhaustive chemical analysis, so far as we are aware. It is found on the southern shores of the Baltic in certain localities and is washed up most abundantly in the autumnal and winter storms. A chemical analysis gives its composition as follows:—

Water	2.6
Coal	2.4
Oxy. Sulphate of iron	0.72
Sulph. Lime................	0.82
Oxid. Iron	8.48
Clayey Earth................	4.43
Chalky "	0.10
Sulph. Acid................	1.10
Magnesia	0.41
Silicic Acid................	16.15
Quartz and other fragments ..	62.

In another article there is a curious account of certain human skeletons found near Tilsit close to the Russian frontier. It appears that in the year 1858 during the progress of certain excavations, the work people came upon a large number of human skeletons, the ornaments upon which buried with the bodies, showed that they belonged to some of the old German nations. The skulls were taken away and submitted to close examination and comparison. The races formerly inhabiting these regions were supposed to be the old Prussian and Slavic; but in comparing

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them with skulls of those tribes preserved in the Berlin Museum, the following marked differences of measurement were observed:—

Comparison of length to breadth, the latter being taken as 1000.

Slavic	$\frac{1173}{1000}$
Old Prussian	$\frac{1445}{1000}$
Tilsit Skull	$\frac{1540}{1000}$

Again taking length with height, the latter being assumed as 1000, we have:—

Slavic	$\frac{1299}{1000}$
Old Prussian	$\frac{1714}{1000}$
Tilsit Skull	$\frac{1862}{1000}$

So that the ancient skulls, far from being of a low barbaric type, are of the highest Dolicho-cephalic character. The inference is plain that these skulls belong neither to the Slavic, or old Prussian, nor to its cognate Lithuanian Races. But strange to say they have a marked affinity and resemblance to the Celtic skulls in the same Museum. The writer therefore deduces the almost moral certainty that in the pre-historic age the Eastern shores of the Baltic were inhabited by a branch of the Celtic people; and that that race had a much wider territorial expansion than is usually assigned to it.

Amongst other articles of general interest is one on the Coca, the plant in South America whose leaves possess the singular property of in themselves enabling men to undergo extraordinary

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fatigue and privation. The Coquero Indians generally use from ½ to 1 ounce per diem, which they chew and go for weeks without further aliment exposed to the inclemency of the weather and in other respects to absolute starvation. A chemical analysis gives an alkaloid, "Cocaine," which bears a strong resemblance to Aconite, the active principle of Bella donna, and like it, has the property of dilating the pupil of the eye.

In both France and Prussia for some years past, statistical returns connected with fatal accidents from Electricity, have been carefully kept and published. In France during 17 years, no less than 1308 people have been struck dead by lightening, giving a yearly average of 72.22 persons. Prussia gives an almost exactly similar average viz. 72.25. In both countries, the male victims are much in excess of the females. In Prussia the districts of greatest mortality from this cause stand in the following order,—1. Province of Prussia, 2. Silesia, 3. Brandenburg, 4. Pomerania, 5. Westphalia, 6. Rhenish Prussia, and least of all the Polish Duchy of Posen. According to these returns the greatest number of accidents happened in and near buildings ; then come the open fields ; and, contrary to the popular belief the fewest occurred *under trees.* To those acquainted with the German language we strongly recommend a regular perusal of this scientific journal ; the two first numbers are most promising, beautifully printed and profusely illustrated; and the topics are well chosen and ably treated.

XIX..—*The Origin of Brahmanism.* By Major H. Congreve.

Three accounts are extant of the invasion of India under heroes named Bacchus, Rama, and Osiris. The first is a Greek legend, the second is of Indian origin and the third is Egyptian. I am persuaded they all refer to the same expedition, and that from its arrival in India dates the dawn of Brahmanism in this country.

Greek Account of the Invasion.

Bacchus marched into the East for the conquest of India, at the head of a large Army. He was accompanied by Pan, Silenus, and

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the Satyrs. He effected the subjugation of the country. The poet Dionysius thus refers to the adventure of Bacchus:

> " There is moreover, wonderful to tell,
> In the rich region, which the Ganges laves,
> A pass esteem'd most sacred: this of old
> Bacchus is said, in wrathful mood, distress'd,
> To have traversed, what time he changed
> The soft Nebrides for a shield of brass;
> And for the Thyrsus, bound with ivy round,
> He couched the pointed spear."

INDIAN ACCOUNT OF THE INVASION.

Rama a conqueror of the highest renown, and extirpator of the indigenous royal races in India, delivered nations from tyrants, and subjugated the Deccan at the head of an army of monkies, the general of which was Hanumunta. The throne of Rama was usurped by his brother Bharata, and he wandered far in search of his consort Sita.

EXPEDITION TO INDIA DERIVED FROM EGYPTIAN SOURCES.*

In the history of Osiris he appears as a great conqueror, who travelled over the face of the whole earth, winning new territories wherever he came. He is said to have been the son of Rhea; and his chief attendants were Pan, Anubis, Macedo, and Maro a great planter of vines. The people of India claim Osiris as their own. Many make him a native of Egypt, and mention his travels through Arabia and Ethiopia to India, which he conquered; whence he turned back to Egypt. He built cities in various parts of which the most remarkable was Hecatompulus or Theba. He is particularly stated to have introduced the vine everywhere in his excursions, which appears to identify him with Bacchus. He was esteemed a great blessing to the Egyptians both as a lawgiver, and as a King. The people of Memphis shewed his Taphos, or high altar tomb under which he was supposed to be buried. The solemnities at the burial of Osiris were distinctly Bacchic. The pri ts wore panther skins, carried Thyrsus staves, and convulsed themselves like the Bacchautes. His throne was usurped by his

* We are indebted for the preservation of this portion of Egyptian history chiefly to Herodotus, Diodorus, Plutarch, and Eusebius.

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brother Typhon, and he wandered in search of his lost wife Isis, in the same manner as Rama after Sita. Isis afterwards sought for his scattered limbs, as her counterpart Demeter did for those cf Bacchus. On his expedition to India, Osiris was accompanied by Apollo and Pan, and he left the care of Egypt to his minister Hermes. To dismiss the absurdity of monkies or Satyrs being employed in the expedition, we must assume that the effigy of the Egyptian god Pecht, the same as the Greek Pan, and the Hindu monkey god Hanuman, was borne on the banners of the army.

I shall endeavour to prove who the heroes of the expedition really were, commencing with the most prominent. I express my conviction that Osiris or Bacchus, is actually Misraim, afterwards deified in India as Bramah, and that Rama his nephew (Genesis Chap. X. v. 6-7) is the Rama of Hindu Mythology. Misraim, Rama, and Cush are allowed to have been the most powerful and adventurous of the children of Ham who settled in Africa; and there is reason to believe the two last along with Seba, accompanied the expedition of Misraim. The belief that Government was first established, laws enacted, and religion introduced in India by Rama, about 3,800 years ago, corresponds with the date assigned to the death of Noah, and the settlement of his immediate descendants.

The association of the name of Misraim with such names as Bacchus and Osiris, may at first excite the surprise, and disturb the prepossessions of some of my readers; but I beg they will reserve their criticism until they have completed the perusal of this paper, in which, I can assure them, they will find nothing in opposition to the sacred books of the Old Testament; while, the more to set their minds at ease, I add, that the right thinking Sir W. Jones acknowledged the identity of the two Ramas* to have occurred to his mind as being more than probable. I remind them, moreover, that, the Jews alone preserved real names in their genealogies,—the Pagan Greeks and Egyptians bestowing new names and additional titles upon the ancient heroes, whom they deified, and to whom they ascribed exploits, and gave attributes

* The Hindu Purans speak of the love felt by their Rama for the land of Egypt.

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too extravagant to belong to human beings. Moreover, if the Pagans could render Japhet into Jupiter or Zeus; Noah into Saturn or Chronos, and Naphtuhim into Neptunus; it is quite as probable they would give the appellation of Bacchus to Misraim, whose grand father taught mankind the use of the grape (Gen. IX 20. In like manner Misraim was called Osiris by the Egyptians. Although he figures so conspicuously under this designation, in the Egyptian religion, it is not a necessary consequence that Misraim himself abandoned the simple faith of his fathers. In the progress of a long reign, he may have won the affections of his subjects so considerably, as to have been elevated to the dignity of a deity, and had idols, and statues erected to him by the priests, at that time the most idolatrous in the world, and been placed at the head of their system;* thus we find that Arbelus or Belus, son of Nimrod, was among the first who was honored by his subjects with the title of Deity.† The name of Misraim preserved in

* History furnishes examples of foreigners, both by birth and religion, being raised to the supreme power, and held in high veneration after their decease. The Parthians, after their separation from the Seleucidae, remembered with affection their Greek conquerors of former times. In the legends of some of my Parthian coins appears the following in Greek "The King of Kings, ... the Great, the Just, the Beneficent, the illustriously born, the Lover of the Greeks." Scipio was invited by the Spaniards he conquered to become their King. The Prætor Scaevola Governor of Asia, had festal games instituted in his memory by the grateful Asiatics. Bernadotte was confirmed King of Sweden by the voice of the people.

Whether Misraim founded the Egyptian religion, whether he became a convert to it, or whether adhering to the simple patriarchal religion, he employed that of his newly acquired or adopted country as a political engine, are points which will probably ever remain in obscurity. For my own part, as the text indicates, I am inclined to adopt the last supposition. Hestiaeus quoted by Josephus says: "Such of the priests as were saved from Babel took away with them the sacred vessels of Jupiter," a testimony to very early apostacy among the immediate descendants of Noah.

† And among the Greeks, Ganymede, Cleitus, Tithonus, Orion, Castor and Pollux, Ino, and Hercules were made deities during their existence as human beings.

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the word Misr a name of Egypt, and the surname Misr or Misra appertaining to the Brahmins in the west of India, manifest how religiously his memory was cherished both in Egypt and India; at the same time the name of his nephew Rama is found in Egypt as Rameses, another name of that country;* and in India in Rama, an incarnation of Vishnu, the second person of the Hindu Triad, facts evincing how greatly he too was venerated in those countries. The names of Misr, Cush, Rama, and Seba remain unchanged in Sanscrit, and are highly revered by the Hindoos.

An objection may be advanced against the possibility of Misraim collecting a force adequate for the invasion of the remote India; but it is untenable, with the facts before us that in Misraim's life time Nimrod erected vast cities capable of containing tens of thousands of inhabitants, and that he could assemble large bodies of men to carry incursions into neighbouring territories. Trogus Pompeius (in Justin) writes that; "Egypt was a most flourishing and magnificent country before Ninus was born." Berosus testifies that within 140 years after the flood, Spain, Italy and France were peopled. I do not maintain that India was, in the first instance, peopled by a colony from Egypt; my intention being to demonstrate, if possible, when and whence Brahmanism was introduced in India, and who the principal Gods belonging to it really were; nor do I desire to conceal the fact that my view of the connection between Egypt and India is at variance with most authors and critics who have treated the subject: civilization and religion is considered by them to have been brought from India to Meroë south of Egypt, and thence to have descended with the stream of the Nile into Lower Egypt. I cannot concur in this opinion, when I reflect how utterly contrary such a migration would have been to the will of the Brahmins who forbid their followers to quit India. Sir W. Jones confirms these views. "M. Sonnerat" he says, refers to a dissertation by Mr. Schmit which gained a prize at the Academy of Inscriptions, "On an Egyptian colony established in India." "It would be worth while to examine his authorities, and either to overthrow, or verify them by such higher authorities as are accessible in these provinces. I

* Ra is the name of one of the Egyptian Gods.

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strongly incline to think him right, and believe that Egyptian priests have actually come from the Nile to the Ganga and Yamuna, which the Brahmins most assuredly would never have left."

Facts contributing to prove that Misraim was deified in Egypt as Osiris, and in India as Bramah.

1. On the authority of Herodotus we find that Osiris wrote the following inscription; "Saturn the youngest of all the Gods, was my father (or ancestor) I am Osiris who conducted a large and numerous army as far as the deserts of India." Saturn of the ancients is always considered to mean Noah, who was the grandfather of Misraim.

2. Osiris is said to have left his country under the care of his wife, and of Hermes. This Hermes by all historians is allowed to be the same as Toth-Athothes. Toth succeeded Menes, the Egyptian name for Misraim according to Bunsen, and was called Herinogenes. Manetho says that the same Athothes was a physician and left the anatomical books. Sanchoniatho says, "Toth was a relation of Misr (Misraim) he invented the writing of the first letters, him the Egyptians call Thoor, the Alexandrians Thoyth, and the Greeks Hermes." Lempriere states, he lived in the age of Osiris and wrote books on Medicine, Theology, &c. Toth or Thut is in reality Phut the brother of Misraim; Phut accompanied Misraim to Egypt, and according to ancient writers afterwards settled in and ruled over Libya. Menes (Misraim) according to Herodotus was the first king of Egypt.

3. Bacchus or Ba-cush means literally the brother of Cush, Bacchus is Osiris,* Misraim is the brother of Cush, therefore Mis-

* Diodorus states that the Egyptians insisted their God Osiris was the Dionysus or Bacchus of Greece. According to Arrian, the Indians gave the same account of Dionysus as the Egyptians did of Osiris. Strabo writes, that the people upon the Indus maintained that Dionysus was a native of their country, and the city Nusa near Mount Meru was the place of his birth. There were, however, some among them who allowed that he came into their parts from the West. He taught them to make wine. His Indian expedition lasted three years. He had among many attendants the Satyrs. Dionysus, according to Pausanias, was exposed in an ark like Osiris.

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raim and Osiris are the same. The memory of Osiris as Bacchus has been preserved by the people of India as Brahma. Bromius was one of the names of Bacchus in Rome, whence the Brumalia or festival in honor of Bacchus held there in the month of December. His memory however, owing to his return to Egypt, has not been so dearly cherished by the Hindoos as that of Apollo or Rama who accompanied him to India, hence we find that although considered the first person of the Hindoo Triad, he is not so much regarded in it as Vishnu or Apollo. For the above reason the wanderings of Osiris and Isis have been transferred by the Hindoos to Vishnu, or Rama, and Sita his wife; while the deprivation of the virility of Osiris, has been transferred to Siva who suffered, in the same manner, by the curse of the holy sages in the Daravanam forest. After the member of Osiris was lost it was worshipped as the lingam in Egypt by order of Isis; Osiris was carried about as a moveable phallus by the Egyptian women, and his statues had an enormous phallus or lingam; a triple phallus was also carried about in processions. The custom of reverencing the same object is still preserved among the boatmen on the Nile.

It is an indisputable fact, that the worship of Osiris distinguished by the same attributes and emblems, has continued in India from the earliest ages to this day, under the appellation of Ishwara a name of Bramah.* This may be completely proved by a comparative survey of both. As patron of the vine Osiris was adored in Egypt, and as Bacchus in Greece under the same emblem of the phallus. It is under this emblem that he is still venerated in Hindustan; and Phalla is one of the names of Ishwara. The bull was sacred to him in Egypt as it is in India. Plutarch informs us, that the Nile flows through the country of Egypt, and is said to have its source in the tresses of Osiris. The Ganges in like manner is fabled by the Hindus to flow from the locks of Ishwara; hence another of his names Gangadhara the supporter of the Ganges. The attendants of Ishwara resemble, in their frantic demeanour, the furious Bacchantes of the God of Naxos. It is re-

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* "When the Hindoos consider the Divine power exerted in creating they call that power Bramah; when a changer of forms he is called Iswara." Sir W. Jones. Iswara is also a name of Siva.

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markable that many of the appellations, by which the Greeks distinguish Bacchus, are also used by the Hindus ; whilst both nations have their legends to account for them. Thus, the Greeks named Bacchus, Dimeter, having two mothers, the Hindus call the son of their Bacchus Divimatri, with the same signification. Pyrigenes "born from fire," and its equivalent in sanscrit Agnija are respectively Greek and Indian appellatives of Bacchus. The title of Thriambus, we are told by Diodorus, was assumed by the Greek deity in his triumph after the conquest of India. Tryambo, in like manner, is one of the most common appellations of the Indian Bacchus.

During my residence at Thebes I obtained from the natives small effigies of the lingam in porcelain found in the tombs : these were used as neck ornaments by the women of ancient Egypt, as they are to this day by the females of the Lingayets or worshippers of the lingam in India. Osiris is said to have had his throne usurped by his brother Typhon in the same manner as Rama's was by his brother Bharata.

4. Misraim is the son of Ham, Osiris the son of Jupiter Ammon or Ham.

5. Misraim called Menes by the Egyptians, seems also to be alluded to in that Menu of the Hindoos who framed the Institutes, or Book of Civil and Religious duties, such a work as we might expect would be introduced by the founder of a new nation. This book is one of the oldest the Hindoos possess, and is said to be addressed to the first inhabitants of the earth, by which, of course, is meant India by the Brahmins. It is worthy of remark that, according to Scripture, Misraim or Menes had seven sons, and Menu of the Hindus also had seven sons or Rishis, fathers of the Pitris or Patriarchs of India.

6. From Chronos and Rhea came Osiris; Chronos is Noah, the ancestor of Misraim.

7. Ekoris or Vexoris of Egypt, mentioned by Justin, is Osiris; and this Ekoris is supposed to have been Misraim, by old writers.

8. Misr or Misra, the same as Misraim, is a surname of the

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Brahmins in the West of India, where the name is held in the highest veneration.

9. On my shewing the Egyptian Pantheon to a Hindoo he at once identified the robed Osiris as Bramah.

10. The relations of Misraim, viz: Ham, Seba, Sabtechah, and Phut have had their memories preserved in Egypt in the names of the Gods Amun, Seb, Set, and Toth.

11. The great gods of the Osiris circle, seven in number with a transition to an eighth, including Osiris himself, had for their originals, probably, Misraim and his seven sons. The statues of the God of Memphis, Ptah Osiri, or Osiris, and his seven sons, were shewn to Cambyses in the temple of that city. A Gana or circle of Hindoo gods consisted of eight Vasus.

12. Osiris is the human God, the God-man of Egypt.

13. Diodorus writes that Osiris said of himself "I am the son of Chronos born of an egg." Precisely the same myth attaches to the birth of Bramah in Indian Mythology.

14. How far the names of other members of the family of Ham have spread in the East appears below:

Ancient names of the family of Ham preserved.		Countries.		Names of Gods.
Ham	in	Thibet	as	Mahaammonee.
Phut	,,	Siam		
Cush	,,	China	,,	Saka.
Cush	,,	Tonquin	,,	Chaka and

Ham, in Ava and India, as Godama.

The name of Ham, Amun, or Aum, has been preserved in the names of the Buddhist Gods, thus.

God	A U M	a
Got	A U M	a
G	A U M	uta
Maha	A M U N	ee

while the element is contained in the Hindu name of God SAUMy and in Br A Mah, and RAMah.

The following extract from a Hindu sacred book attests the reverence paid to the name of Ham or AUM by the Hindoos: "Let *om* be first said, then *nama*, and afterwards narayanaya; *om* is one syllable, *nama* is two syllables, and *narayanaya* five syllables; thus *om narayanaya nama* is that eight syllabled invocation, from the repetition of which are obtained long life, wealth, and progeny, and finally immortality by participating in the ineffable bliss of God. The syllable *om* is the same as A U M and he who repeats these letters thus joined together, shall be delivered from the miseries of transitory existence, and shall ascend to Vaikuntha."

15. In number the brothers Seba, Havilah, Sabtah, Ramah, and Sabtechah, mentioned in Scripture, as the sons of Cush, and nephews of Misraim, correspond with the Hindu Puncha Pandava, or five ancient Demi-gods, of whom there is a tradition throughout India. Many of the attributes of the Pandoos belong to the leaders of the Egyptian expedition to India. The five Pandoos, moreover, are the great grandchildren of the Ganges, an allegorical allusion to Noah; and in that relationship are cognate with the five sons of Cush who are the great grandchildren of Noah. And the name of one of the Pandoos is Dherma Rajah, who is Godama, or Buddha, who is an incarnation of Rama, the name of one of the sons of Cush. Chronologically the five Pandoos may also be compared with the five sons of Cush; thus the last Pandoo ended his reign in the year of Kaleyugam 1036, or 3911 years ago; Misraim was established in Egypt 2188 B. C. 4033 years since.

By subtracting one date from the other, we obtain one hundred and twenty two years as the period between Misraim's settlement in Egypt, and the death of the last of the five Pandoos, or his nephews, the sons of Cush, about the time to be expected.

16. The first Prince mentioned as reigning in the Brazen age of the Brahmins is called Cusha. The mother of Rama of the Hindoos is called Cushala, probably signifying the wife of Cush. The father of Rama is called Dasaratha signifying that his war chariot bore him to all quarters of the Globe, a title applicable to Cush the son of Ham, whose conquests are handed down in the

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names of certain countries, as Cushan the ancient name of Ethiopia, in Cuthay the ancient name of China, Cushgar, Cushmir, Cutch, &c.

17. Iswara, or Brahma (in the Vrihadhaima) is said to have descended from Heaven, and to have chosen for his abode the land of Misra or Egypt.

18. The name Osiris, or more properly "Isiris" signified in Egypt "the Lord." Ysiris in Sanscrit has the same meaning and is applied to Bramah.*

19. Krentzhemius, quoted by Raleigh, says, that "Misraim and Osiris are words of near affinity, and found in the Hebrew tongue;" and Raleigh adds, "neither do I see cause of doubt whether Osiris were the same with Misraim."

20. Syncellus says that "Menes was Misraim;" Menes, by the Egyptians was considered the Lunar God with the Hippopotamus; Osiris holds the same position. Osiris was exposed in an ark, Misraim may have been in the ark with his father Ham. The Brahmins assert that Bramah issued from the side of Vish-*nu* while the latter was borne in a shell, or ark on the face of the waters. *Nu* is the common oriental name of Noah.

Inferences from the foregoing facts arranged in Corresponding order.

From the 1st. That Osiris is Misraim.

„ 2nd. Phut (Hermes or Toth) the brother of Misraim is shewn to have lived in the reign of Osiris, King Menes, Misraim, or Misor was coeval was Toth, and consequently with Osiris. As it is not likely two Kings reigned over Egypt contemporaneously, one carrying his conquests so far as India, we may fairly conclude Osiris and Misraim to be the same personage, if other proofs even were wanting.

„ 3rd. That Osiris is Misraim; and, after the conquest of India by him, alluded to in the Greek, Indian, and Egyptian accounts which mutually confirm each other, he was worshipped in India as Bramah.

* "Hsiris" according to Bunsen's spelling.

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From the 4th.	That Osiris is Misraim.
„ 5th.	That Misraim was present at one time in India, and his memory has been dearly cherished by the Brahmins.
„ 6th & 7th.	That Osiris is Misraim.
„ 8th.	That the name of Misraim was held in high veneration in India; and that he was there worshipped as Bramah.
„ 9th.	That Osiris (Misraim) is Bramah.
„ 10th.	That the relations of Misraim were canonised in Egypt.
„ 11th.	The same, and also in India.
„ 12th.	That Osiris was a human being exalted to the rank of a deity in the same manner as I suppose Misraim to have been. Osiris is alluded to by historians as a monarch, while his name is most prominent among the Egyptian gods, as will presently appear.
„ 13th.	That Osiris, Misraim, and Bramah are the same.
„ 14th.	That Ham, father of Misraim was reverenced in the East wherever Brahminism or Buddhism took root.
„ 15th & 16th.	Chronological and traditional evidence that the memory of Misraim and his relations, was preserved by the Brahmins; and countenances the belief, of his having been deified under the name of Bramah.
„ 17th.	That Bramah (Osiris or Misraim) once dwelt in Egypt.
„ 18th.	That Bramah, Osiris, and Misraim are synonymous.
„ 19th.	Countenances the thesis that Osiris and Misraim are the same.
„ 20th.	That Bramah, Osiris and Misraim are the same.

The Egyptian account of the invasion of India by Osiris states he was accompanied by Apollo* and Pan, and that he left the care of Egypt to Hermes. From what has preceded I think there are

* The Indian Apollo is Rama Chrishna.

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reasons sufficient for believing, that by Osiris is meant Misraim, by Apollo Ramah, and by Hermes Phut; that the Egyptian god Sevek or Seb is really Seba the nephew of Misraim, and that in India these personages have been venerated as Bramah, Ramah, and Siva, and Pan as Hanumunta; in other words that the actual personages of the Hindu trinity, Bramah, Rama, and Siva, are Misraim, Rama, and Seba of Genesis.

That Egyptism and Brahminism are but different designations of one religion, the latter deriving from the former, I think is unquestionably proved by what subjoins:

1. In both countries the deities are identical, vide annexed list.

2. The Pagodas and other places of religious worship in India correspond in architectural plan and details with those in Egypt, The most striking examples of resemblance, I might say identity. are these:

In Egypt.	In India.
The pyramidal tower or propylon surmounting gateway of pagodah at Edfou,—and pyramids.	The pyramid over the entrance of the Tanjore and other pagodahs; and double propylons which I think I have seen somewhere in the South of India surmounting gateways of pagodahs.
Single pylon in inner court of Karnac.	Single pylon over entrances of smaller pagodahs in India.
Obelisks flanking entrance of the pagodah at Luxor.	Obelisks flanking gateway of the pagodah at Madura.
Great choultries at Dendera, Gau-el-Kebir, and Edfou.	Trimmel Naig's choultry at Madura, and others.
Open choultry at Philæ on mound near river.	Open choultry of Neerali, Madura, on bank of river.
Mammeisi at Elephantine.	Porches of lesser Pagodahs.
Rock cut temples of Siout and Ghebel Abul-Fada.	Rock cut temple in back of the rock at the seven Pagodahs, and elsewhere.
Colossal statues at Thebes and Abousimbel.	Colossal statues at Bamean North of Cabul.

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Samee houses enshrining an idol, with a prostrate bull, or other sacred animal, fronting them, near great Pyramid, and at Thebes.	The same common throughout India.
Monolithic temple of Latona at Buto.	Monolithic temples at Seven Pagodahs.
Pillars of enormous girth, Thebes.	Pillars of enormous girth at Elephanta and elsewhere.
Statues of the Kings with costumes of India, in the Pagodah at Karnac.	Statues of the Kings in many southern pagodahs of India. The great pagodah at Rammisseram in the isle of Paumban contains a gallery of statues of Rajahs who enriched the establishment.
Rock Sculptures at Abousimbel.	Rock Sculptures at Seven Pagodahs, and Ellora.

The ground plan of the temples in Egypt and India, is coincidental.

3. The superstition of the Metempsychosis was common to both countries.

4. The institution of castes is alike common. The ancient inhabitants of India Limyrica, like the Egyptians, were divided into seven orders, the philosophers being the most honorable.

5. The sacred literature was nearly the same in both countries. The Chanters or Lays of the Egyptian priests being the prototypes of the Vedas; and the Ordinances and Ceremonials of the Egyptian sacerdotal books, the same as the Institutes of Menu.

6. The ceremonial processions with offerings to the Gods found sculptured in Egypt, are similar to those now seen in India.*

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* The following account of a religious festival in Egypt, in Herodotus, B. 2; C. 63, furnishes the prototype of a similar ceremony in India:

"But in Papremis they offer sacrifices and perform ceremonies, as in other places; but, when the sun is on the decline, a few priests are occupied about the image, but the greater number stand, with wooden clubs, at the entrance of the temple; while others accomplishing their vows, amounting to more than a thousand men, each armed in like man-

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7. The costumes of the Hindoo divinities, preserved in the dramas of the country, are such as are met with in Egyptian images. The costumes of the Kings seen on their statues at Karnac in Egypt are Indian.†

8. Human sacrifices were practised by both people.

9. The Indians, according to Curtius, served the deity Manes, the same as Menes a name of Misraim, from him the priests were styled Barachmanes or Brachmans.

10. Two languages were used in Egypt viz., the Hieratic or language of the priests, and the Demotic or language of the people; the same is the case in India. A close affinity is now found to have existed in the languages of India and Egypt. The written Abyssinian language or that of the Ethiopians, so intimately connected with the Egyptians, is written like the Indian languages from left to right, and the vowels are annexed as in Devanagari to the consonants, with which they form a syllabic system.

11. The cremation of the body by the Brahmins, and its preservation as a mummy by the Egyptians, are referable to the same cause, which is the prevention of *corruption* under the belief of a Metempsychosis.

12. Animal worship common to both religions.

13. The African physiognomy and woolly hair found on idols of the Buddhic faith, an offshoot from Brahminism, are derived from Egypt.

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ner, stand in a body on the opposite side. But the image, placed in a small wooden temple, gilded all over, they carry out to another sacred dwelling: then the few who were left about the image *draw a four-wheeled carriage, containing the temple and the image that is in it.* But the priests, who stand at the entrance, refuse to give them admittance; and the votaries, bringing succour to the god, oppose, and then strike, whereupon an obstinate combat with clubs ensues, and they break one another's heads, and, as I conjecture, many die of their wounds; though the Egyptians deny that any one dies."

† The lists of the Kings of Southern India, now nearly complete, might be easily illustrated with portraits by our photographers. Many of the pagodahs of this Presidency contain statues of Kings who were founders or benefactors.

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14. The story of Vishnu cutting the body of Sati into fifty-one pieces which were scattered in different places, and each place where a part fell becoming a place of worship dedicated to the female power, is evidently copied from a similar fable in the lives of Osiris and Isis ; indeed, many of the legends of the Indian religion have been traced to Egypt, chiefly by Wilford, in the Asiatic Researches.

15. The Triad of Egypt i. e. Osiris, Horus, and Typhon is a form of the Hindu religion.

16. Cusha-dwip, or Egypt, is spoken of in the Purans with reverence ; and Cala, Nila, or the Nile is held so sacred by the Brahmins that, according to the Skanda-puran, the murder of one of their caste is expiated by bathing in its waters.

17. In the Padma Puran, we find that, Satyavarman (Noah) was found intoxicated by his son Charma (Ham) who exposed his fathers nudity to his brothers Sherma, (Shem) and Jyapeti (Japhet). Satyavarman cursed Charma in the same language recounted in Genesis. This too manifests that the Brahmins were acquainted with the history of Misraim and his relations. Plato, in his Dialogue entitled Timaeus, writes that an Egyptian priest recounted to Solon, out of the holy books of Egypt, the story of a universal deluge.*

18. The Hindu Bacchus is also called Bagis, a name very similar to Bacchus ; Bacchus (Osiris) in Egypt received offerings of spirits, and the blood of a hog ; in India the same offerings are made to the God of Wine.

19. The women of modern Egypt, following the custom of the ancient people, seat themselves on the Phallie stones among the ruins to remedy barrenness; the same superstition prevails in India.

20. Certain colours were held sacred both by the priests of Egypt, and those of India.

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* A contradiction to Bunsen's assertion that the ancient Egyptians had no record of a flood.

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IDOL GODS OF THE EGYPTIANS, AND THEIR CO-ORDINATES IN ITALY* AND INDIA.

Egypt.	Italy.	India.
Num with the hooded snake.		Nagum with the hooded snake.
Pecht the monkey god.	Pan.	Hanuman the monkey god.
Apis with the head of a bull.		Nandee the bull of Iswara.
Phtah.	Vulcan.	Agni, god of fire.
Chunsu.	Hercules.	Chrishna.
Sebak, the crocodile headed deity.		Varuna, with the crocodile.
Anubis.	Hermes.	Nared, son of Bramah.
Ptah, the deformed dwarf.		Buddah Avatar, the deformed dwarf.
Anuke.	Vesta.	Swaha, wife of Agni.
Khem the phallic god.	Phallus.	The Lingam god.
Isis with the crescent moon.	Diana.	Anna-Purna devi, with the crescent moon.
Tefnu the lion headed goddess.		Cali the lion headed goddess, and Nar Singha.
Apt, with the head of the hippotamus.		Mahish Asura, a monster with head of a buffaloe living in water.
Isis, the lotus goddess.	Ceres	Luchmee, the lotus goddess.
Amun, lord of Heaven.	Jupiter Amon.	Indra god of Heaven.
Seb the father of Osiris.	Saturn.	The first Menu.
Osiris.	Bacchus.	Bagis, the patron of the Vine.
Hethor.	Venus marina.	Rhemba.

* The Gods of Italy are inserted as a key to the attributes of the others.

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Egypt.	Italy.	India.
Isis wife of Osiris.	Isis.	Isi wife of Iswara.
Hethor with the head of a cow.		Isani with the head of a cow.
Tet, lord of the Moon.		Chandra.
Neith.	Minerva.	Sereswati, wife of Bramah.
Her.	Horus.	Heri.
Anubis, dogheaded.	Hermes canis.	Cerbura, the dog divinity of Yama.
Nubi with the symbol of the boar.		Varah, the boar Avatar of Vishna.
The Ram headed god Nu.		The ram headed god, attendant on Vera Bhadra.
Seb with the goose.		Brahma on the goose Hanasa.
Apep the Serpent slain by a deity.		Caliya the Serpent slain by Chrishna.
Hapi Mu the river goddess bearing aquatic plants.		Ganga the river goddess bearing aquatic plants.
Anta, goddess of war wielding a battle axe and spear.		Durgah goddess of war wielding spears and swords.
Typhon Bebon the destroyer.		Buban Siva the destroyer.
Osiris as the great judge.	Minos.	Dhermarajah, the great judge.
Osiris in the tiara and dress of Vishnu.		Vishnu.
Osiris as the Sun.		Suryen, Rama Chrishna
Osiris or Isiris.	Bromius or Bruma.	Ysiris Bramah, Iswarah.
Nutpe.	Cybele.	Bhavani.
Ra with the hawks head.		Garuda with the hawks head.

Egypt.	Italy.	India.
The Scarabeus significant of a God or his power.*		The Tortoise Avatar.

If Brahminism did not come from Egypt, where else could it have come from? Certainly not from China, Arabia, or the Semitic nations on the Mediterranean, and most assuredly not from Iran, and the adjacent countries in Central Asia north of the Hindoo Kosh, the religion of whose people, from a period shortly after the deluge to a time long after Brahminism was established in India, was Zabaic and Milhraic. The discovery in Egypt of monuments of Brahminism belonging to an epoch far anterior to the existence of that religion in India, indicates plainly enough that it does not owe its origin to the latter country. During my stay in Egypt, and trip up the Nile, I was forcibly struck with the resemblance of everything around me to what I had seen in India; and my observations confirmed my opinion that there had been a very close connection in remote times between the two people. Although the inhabitants of Modern Egypt are Mahomedan, many of the customs prevailing before their era are yet preserved, this is especially the case as regards the methods of agriculture and irrigation which are completely Indian. The habits and usages of the ancient Egyptians handed down in the paintings at Beni Hassan, and in the tombs of the Kings at Thebes are those of the Hindoos; indeed, Sir G. Wilkinson's descriptions of them might, with equal propriety, be applied to those of the Hindoos.

The annexed passage from Bishop Russell's history of Egypt is so interesting, and lends so much support to my views, that I cannot refrain from inserting it;

"As a farther proof of this hypothesis, we are informed that the sepoys who joined the British army in Egypt under Lord Hutchinson, imagined that they found their own temples in the ruins of Dendera, and were greatly exasperated at the natives for their neg-

* Can these coincidences be accidental? Can we agree with Bunsen, after an impartial consideration of the preceding facts, that "nothing Asiatic is Egyptian;" or join in his sneer about the "Siren of Indiomania"?

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lect of the ancient deities, whose images are still preserved. So strongly, indeed, were they impressed with this identity, that they proceeded to perform their devotions with all the ceremonies practised in their own land. There is a resemblance, too, in the minor instruments of their superstition—the lotus, the lingam, and the serpent,—which can hardly be regarded as accidental; but it is, no doubt, in the immense extent, the gigantic plan, the vast conception which appear in all their sacred buildings, that we most readily discover the influence of the same lofty genius, and the endeavour to accomplish the same mighty object. The excavater temple of Guerfeh Hassan, for instance, reminds every travelled of the Cave of Elephanta. The resemblance, indeed, is singularly striking; as are, in fact, all the leading principles of Egyptian architecture to that of the Hindoos. In both countries large masses of rock have been excavated into hollow chambers, the sides of which are decorated with columns and statues of men and animals carved out of the same stone; and in each are found solid blocks weighing many hundred tons, separated from the adjoining mountain and lifted up into the air. By whom and by what means these wonderful efforts have been accomplished is a mystery sunk too deep in the abyss of time ever to be revealed. To Greece neither country is indebted for any part of its architecture, while she has evidently taken many hints from them. Except at Alexandria and Antinoë, no edifice strictly Grecian appears in Egypt. But we need only compare the monolithic temples of Nubia with those of Mahabali-poor, the excavations of Guerfeh Hassan with those of Elephanta, and the grottos of Hadjur Silsili, as described by Pococke, with the caverns of Ellore, to be convinced that these sacred monuments of ancient days derived their origin from the same source."

POSTSCRIPT.

In my haste to prepare this paper for publication I omitted the following:—

Comparison of Egyptian and Hindoo Names.

Ramessameno.	Ramasamee.
Ramases.	Rama.
Amenuph.	Munepah.

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Chepren.	Curpen.
Cetna.	Kistna.
Chryses.	Chrishsna.
Chenchres.	Chenchee.
Cheneres.	Cheneah.
Menes.	Meneapen.
Maris.	Maree.
Venephes.	Venepen.
Pheron.	Verapen.
Thampthis.	Tamra.
Apachnas.	Apasamee.
Anophis.	Anasamee.
Amenophis.	Menu.

The Egyptian names in the first column are obtained from Syncellus, Manetho, the old Egyptian chronicle, Eusebius, &c.

The language of the Gypsies (the posterity of the Egyptians), whom I believe, to be sprung from the colonies planted by the ancient people on the shores of the Black Sea, (vide Herodotus) and where they are met with still in great numbers especially in the adjacent Russian territory, is replete with Indian words. Mr. Borrow the Gypsy author hearing a Recruiting Officer of the late Company speaking one of the languages of India determined to proceed there, as he thought a clue had been furnished him to the origin of the Gypsy race. He was much struck with the strong similarity the two languages bore to one another, for which see last pages of Romany Ry or Lavengro.

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PUBLIC WORKS DEPARTMENT.
Public.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following Proceedings of the Board of Revenue, dated 6th August 1861, No. 4,253 :—

Read the following letter from G. THORNHILL, Esq., Acting Collector of Kistna District, to W. HUDLESTON, Esq., Secretary to the Board of Revenue, Chepauk, dated Masulipatam, 1st August 1861, No. 191.

SIR,

I have the honor to report for the information of the Board that about 4¾ P. M. of the 24th ultimo, an earthquake was felt in in the village of Nandigama, as reported by the Tahsíldár of Nandigama Division in this District. The direction of the shock, which lasted but a second, was supposed to be from S. W. to N. E., and was attended with a noise similar to the report of a cannon.

Ordered to be submitted for the information of Government.

(A true Copy and Extract.)

(Signed) W. HUDLESTON,
Secretary.

ORDER THEREON, 10th August 1861, No. 1,525.

Order to be recorded.

(True Extract.)

(Signed) C. G. MASTER,
Deputy Secretary to Government.

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Meteorological Observa

JANU

Month and date.	Standard Barometer. Inside House on the "High Ground." Mean of Observations at 9.30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	27·27	·1			70	5	62·5	·78	79½	60	
2	·29	·1			70	5	62.5	·78	77	60	
3	·33	·1			71	6	63·5	·78	78	60½	
4	·35	·1			70	10	55·	·61	74	58½	
5	·38	.12			70	10	55·	.61	77½	58	
6	·38	.12			70	9	56·5	·64	79	59	
7	·36	.12			70	8	58·	·67	80	60	
8	·33	·14			70	4	64·	·82	78	59½	
9	·32	·12			71	6	62·	·74	81½	62	
10	·31	·1			71	6	92·	·74	81	61½	
11	·30	·12			70	7	59·5	·71	80	61	
12	·29	·1			70	9	56·5	·64	82	60	
13	·31	·1			70	9	56 5	·64	79	58	
14	·35	·1			70	9	56 5	·64	77½	55½	
15	·32	·12			70	9	56 5	·64	77¾	57½	
16	·33	·1			71	9	57·5	·64	78½	62½	
17	·35	·1			71	9	57·5	·64	81½	61	
18	·34	·12			71	8	59·	·67	80½	62	
19	·37	·1			70	7	59·5	·71	81	61¼	
20	·35	·1			70	8	58·	·67	81	58½	
21	·33	·1			69	9	54·6	·62	79½	61	
22	·31	·1			70	9	56·5	·64	79½	58½	
23	·33	·1			71	11	54·5	·58	79½	62	
24	.35	·1			71	10	56·	·61	81	60	
25	·33	·1			71	11	54·5	·58	80¾	57½	
26	·35	·1			71	10	56·	·61	81¼	59½	
27	·33	·1			70	10	55·	·61	81¾	65	
28	·31	·1			71	9	57·5	·64	84½	64½	
29	·31	.1			73	8	61·	·68	83½	66½	
30	·33	.1			73	8	61·	·68	83	66	
31	·33	·1			74	9	60·5	·64	83¼	67	
Monthly Means.	27·3	0·1	67·8	5·6	70 6	8·3	58·2	66·6	80·0	60·8	

tions at Bangalore—1860.

ARY.

Wind. Whewell's. Horizontal movement in 24 Hours in Miles.	*Wind.* Whewell's. General Direction	*Rain.* Crossley's. Inches and tenths.	Moon. Phases of.	
			☽	
			○	
			☾	2 shocks of earthquake felt during night, on the Shevaroy Hills.
				Thermometer 34 at day break, in Sir T. Munro's Tent in 1800 on the western Ghauts.
			●	
			☽	
		Total.		

	Laul Baugh	High Ground
Mean Monthly Temperature	70·4	
Maximum........................	84·5	
Minimum............................	55·5	
Mean diurnal Range..................	19·2	
Monthly Range........................	29·0	
Mean of observations of Dry Bulb inside House at 9.30 A. M. & 3.30 P. M....	......	69·2
,, Depression of wet at do. do.	.... .	7·0
,, Dew Point. at do. do.	......	58·0
,, Evaporation Force of at do.	.....	·22
,, Humidity. at do. do.	......	·69

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FEBRU

Month and Date.	Standard Barometer. Means of observations at 9.30 A.M. and 3.30 P.M.	Standard Thermometers. Inside House on the "High Ground." Diurnal Range.	Dry Bulb at 9.30 A.M.	Depression of wet, at do.	Dry Bulb at 3·30 P.M.	Depression of wet, at do.	Dew Point from the 3.30 P.M. observations.	Humidity do.	In Verndah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	27·31	·1			76	9	62·5	·64	84	66	
2	·33	·1			76	9	63·5	·64	85	65	
3	·35	·1			76	11	59·5	·58	86½	64½	
4	·33	·1			76	11	59·5	·58	86	63½	
5	·35	·1			77	13	57·5	·53	85¼	61	
6	·34	·12			77	14	56·	·50	84	60½	
7	·33	·1			77	14	56·	·50	83	62	
8	·31	·1			77	14	56·	·50	82	63	
9	·31	.1			77	16	53·	·45	83	60	
10	.34	·1			75	13	55·5	·53	85	58	
11	·26	·12			75	14	54·	·50	84	59	
12	·34	·1			76	11	59·5	·58	86	61	
13	·27	·1			77	13	57·5	·53	88	62	
14	·25	·1			75	12	57·	·55	87	62½	
15	·30	·06			75	12	57·	·55	84½	66	
16	·27	·1			76	8	64·	·68	85	68	
17	·28	·12			76	5	68·5	·78	87	71	
18	·26	·12			76	6	67·	·75	88½	69	
19	·20	·12			76	8	64·	.68	89½	70	
20	·20	·12			78	13	58·5	·53	99	70	
21	·22	·12			78	11	61·5	·58	88½	68½	
22	·22	·12			78	11	61·5	·58	88	68	
23	·20	·12			79	11	62·5	·58	89½	69	
24	·21	·1			80	12	62·	·56	88½	73	
25	·19	·1			80	12	62·	·56	89	74	
26	·20	·12			79	11	62·5	·58	88	70½	
27	·19	·1			80	11	63.5	·59	88½	71	
28	·21	.1			80	12	62·	·56	90	70	
29	·22	·08			79	14	58.	·50	90½	67	
MONTHLY MEANS.	27·3	0·11	72·5	7·8	77·1	11·4	59·7	57·4	86·7	65·9	

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ARY.

Wind. Whewell's — Horizontal movement in 24 Hours in Miles.	Wind. Whewell's — General Direction	Rain. Crossley's. — Inches and tenths.	Moon. — Phases of.	
			○	
			☾	
			●	Rain near Mysore, and in the Northern Talooks of Bangalore Division.
		Total		

	Laul Baugh	High Ground
Mean Monthly Temperature............	76·3	
Maximum.	90 5	
Minimum.	58·0	
Mean diurnal Range..................	20·7	
Monthly Range.......................	32 5	
Mean of observations of dry Bulb inside House at 9.30 A. M. & 3.30 P. M. ..	......	74·8
,, Depression of wet at do do	... ..	9 6
,, Dew point. at do do	......	60 6
,, Evaporation Force of at do do	......	·31
,, Humidity. do do	.. ...	·62

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MAR

Month and Date.	Standard Barometer. Inside House on the "High Ground." Mean of observations at 9·30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Dry Bulb at 9·30 A. M.	Depression of wet, at do.	Dry Bulb at 3·30 P. M.	Depression of wet, at do.	Dew Point from the 3·30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O being all cloud 10 pure Sun shine.
1	27·23	·1			80	14	59·	·50	91	69	
2	·21	·1			79	13	59·5	·53	91	68	
3	·20	·12			79	13	59·5	·53	92	67	
4	·19	·1			79	14	58·	·50	91	67	
5	·21	·1			79	15	56·5	·48	91	66½	
6	·23	·1			79	16	55·	·45	91¾	69½	
7	·20	·16			79	14	58·	·53	90	68½	
8	·18	·12			80	13	60·5	·53	89½	71	
9	·19	·1			80	12	62·	·56	91	74	
10	·23	·1			80	12	62·	·56	90	75	
11	·24	·12			80	10	65·	·62	92½	72	
12	·23	·14			81	13	61·5	·53	92	72½	
13	·24	·12			81	12	63·	·56	91	69	
14	·26	·12			80	11	63·5	·59	90½	68½	
15	·24	·12			81	11	63·5	·59	93	74	
16	·23	·1			80	9	66·5	·65	91½	75	
17	·20	·12			80	8	68·	·68	91	71	
18	·18	·08			82	9	68·5	·65	91	72	
19	·22	08			82	10	67·	·62	89	71	
20	·23	·1			80	7	71·5	·71	89	69	
21	·22	·12			81	7	71·5	·71	93	72	
22	·21	·1			82	9	68·5	·65	93	71	
23	·23	·1			83	9	69·5	·65	94	72	
24	·23	·1			84	11	67·5	·59	93	73	
25	·25	·1			82	13	62·5	·53	96	76	
26	·23	·1			83	12	65·	·56	94	75	
27	·24	·12			82	12	64·	·56	95	76	
28	·21	·1			83	12	65·	59	93	77	
29	·21	·1			84	12	66·	56	94	80	
30	·18	·08			84	11	67·5	59	95	79	
31	·19	·1			84	10	69·	·62	94	76	
MONTHLY MEANS.	27·20	0·11	77·5	7·7	81·1	11·4	64·0	57·9	92·0	72·1	

CH.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles	*Wind.* Whewell's. General Direction.	*Rain.* Cross-ley's. Inches and tenths.	Moon. Phases of.	
			☽	
			○	At 2. P. M. a whirl wind forced the dust into a dense column or pillar 25 feet in height, and about 2½ feet diameter, which was carried, in this way, a distance of 200 yards, when it remained nearly stationary for about 5 minutes; it then travelled in a S. E. direction, gradually losing its entirely, till it was altogether dispersed about 500 yards from the place where it was stationary, direction of whirl from right to left.
			☾	
		0·025		Very slight Rain.
			●	
		0·005	☽	Slight shower at 2·30 A. M.
		Total. 0·030	in 2 Days.	

	Laul Baugh	High Ground
Mean Monthly Temperature..............	82·1	
Maximum..............................	96·	
Minimum..............................	66·5	
Mean diurnal Range....................	19·9	
Monthly Range.........................	29·5	
Mean of observation of Dry Bulb inside House, at 9.30 A. M. & 3.30 P. M. ..	......	79·3
„ Depression of wet at do do	......	9·5
„ Dew Point. at do do	......	64·3
„ Evaporation Force of at do	......	·37
„ Humidity at do do	......	·63

AP

Month and Date.	Standard Barometer. India House on the "High Ground." Means of observations at 9.30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	27·20	·08			83	9	69·5	·65	94	75	
2	·21	·1			84	10	69·	·62	95	75	
3	·23	·1			85	11	68·5	·59	96	76	
4	·23	·1			84	10	69·	·62	93	78	
5	·21	·1			85	10	70·	·62	93	76	
6	·19	·1			84	8	72.	·68	94	75	
7	·18	·12			84	9	70 5	·65	93	74	
8	·17	·1			83	7	72·5	·71	92	76	
9	·16	·12			83	9	69·5	·65	95	73	
10	·16	08			83	10	68·	·62	95	72	
11	.18	·08			83	13	63·5	·53	95	74	
12	.19	·14			83	12	65·	·56	95	74	
13	·20	·12			82	14	61·	·51	96	75	
14	.21	·1			83	13	63·5	·53	95	76	
15	·21	·14			83	12	65·	·56	94	73	
16	·23	·1			82	12	64·	·56	95	76	
17	·25	1			82	12	64.	·56	94	74	
18	·23	·1			83	12	65·	·56	92	77	
19	·24	·12			83	12	65·	·56	95	78	
20	·25	·1			83	13	63·5	·53	94	75	
21	·26	·12			83	13	63·5	·53	93	76	
22	·21	·1			82	10	67·	·62	92	75	
23	·17	·1			80	7	69·7	·71	89	73	
24	·16	·12			79	6	70·	·75	93	76	
25	·20	·12			80	7	69·5	·71	92	74	
26	.21	·1			82	9	68·5	·65	94	75	
27	·21	·1			83	9	69 5	·65	95	78	
28	·21	·1			83	20	53.	·37	97	78	
29	·18	·12			84	19	55·5	·39	97	80	
30	·22	·1			84	17	58·5	·44	96	79	
MONTHLY MEANS.	27·2	0·11	78·5	5·8	82·8	11·2	66·1	58·9	94·1	75·5	

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RIL.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	Wind. Whewell's. General Direction.	Rain. Crosseley's. Inches and tenths.	Moon. Phases of.	
				Sultry, Rain brewing.
			○	
				Dust storm 5 P. M. and a sprinkle of Rain.
			☾	
				Dust storm.
				Heavy rain in Chicka Ballapoor.
		0·215		Dust storm at 5 P. M. and Rain, Heavy clouds.
			●	
		0·100		
		0·14		Dust storm, Thunder and Rain at 4 P. M.
		0·065		
			☽	
				Hot wind, very dry and every appearance of a storm.
				Do.
				Do.
		Total. 0·520	in 4 Days.	From the 16th to 24th heavy falls of Rain all round were reported; apparently, most severe at Hassan.

	Laul Baugh	High Ground
Mean Monthly Temperature	84·8	
Maximum	·97	
Minimum	·72	
Mean diurnal Range	18·5	
Monthly Range	·25	
Mean of observations of Dry Bulb inside House at 9.30 A. M. and 3 30 P. M.	......	80·6
„ Depression of wet at do do.	......	8·5
„ Dew Point at do do.	......	67·8
„ Evaporation Force of at do.	......	·35
„ Humidity at do do.	......	·65

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MAY.

Month and Date.	Standard Barometer. Mean of observations at 9.30 A. M. and 3.30 P. M.	Standard Thermometers. Inside House on the "High Ground." Diurnal Range.	Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min (Self registering.)	Portion of sky clear, O. being all could 10 pure Sun shine.
1	27·18	·12			86	16	62·	·46	95	79	
2	·13	·1			85	14	64·	·51	95	77	
3	·13	·1			84	11	67·5	·59	94	72	
4	·13	·1			83	10	68·	·62	94	73	
5	·13	·1			84	11	67·5	·59	95	80	
6	·13	·1			83	12	65·	·56	93	75	
7	·15	·1			84	13	64·5	·53	93	78	
8	·16	·12			84	12	66·	·56	91	75	
9	·14	·12			83	13	63·5	·53	95	74	
10	·17	·1			83	12	65·	·56	91	76	
11	·15	·1			83	11	66·5	·59	93	73	
12	·13	·1			83	11	66·5	·59	93	77	
13	·08	·12			82	9	68·5	·65	92	75	
14	·10	·12			83	11	66·5	·59	92	74	
15	·12	·12			83	12	65·	·56	92	73	
16	·10	·1			82	11	65·5	·59	92	73	
17	·12	·1			83	13	63·5	·53	93	76	
18	·09	·1			82	11	65·5	·59	95	77	
19	·05	·1			82	11	65·5	·59	93	73	
20	26·94	·12			83	13	63·5	·53	95	77	
21	·88	·12			82	11	65·5	·59	91	72	
22	·82	·08			81	9	67·5	·65	88	69	
23	·79	·1			79	6	70·	·75	88	69	
24	·80	·08			78	7	67·5	·71	84	71	
25	·81	·1			79	8	67·	·68	87	71	
26	·81	·06			79	9	65·5	·65	91	75	
27	·82	·08			80	10	65·	·62	93	73	
28	·83	·1			79	9	55·5	·65	92	73	
29	·81	·1			80	9	66·5	·65	90	74	
30	·83	·1			79	9	65·5	·65	92	74	
31	·85	·1			80	9	66·5	·65	88	73	
Monthly Means.											
	27.0	0.1	78.	7.8	82.0	10.7	65.9	.60	91.9	74.2	

N. B. From the 20th the Observations of the

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Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	*Wind.* Whewell's. General Direction.	*Rain.* Crossley's. Inches and tenths.	Moon. Phases of.	
				On the 1st a Man was killed by lightning at Sheemoogah near the Cutcherry; his companion escaped unhurt, 2 holes, like rat's holes a yard apart, were found near the spot. The deceased's clothes were burnt and the ground was stained with his Blood; A Boy was killed in a Tree, the trunk of which was split; and the leaves burnt. Dr. Oswald states that the lightning at Sheemoogah this month was constant, and of a prevailing violet color, though sometimes yellow, and that the thunder, was coincident with the lightning; he afterwards informed me that the whole year was a peculiar one, and the Seasons later than usual.
		0·615		
				Hot wind.
		0·110		Dust storm, Thunder storm at night.
				Thunder at 3 P. M. and Rain in the Evening.
		0 015	○	Thunder storm 6 P. M. not much Rain.
				Thunder and little rain at 4 P. M.
				Continued low rolling thunder at night, little rain in the Evening, two bullocks killed by lightning in House
		0·060	☽	in Davenhully Talook.
				High wind, Rain 7 P. M. thunder very continuous.
		0.090	☾	Thunder and heat drops at 3 P.M. Three Cocoanut trees
		0·425		struck by lightning in Pettah.
		0·005		Thunder and rain 3 P. M. storm at night.
				Rain in the afternoon.
				Very sultry evening
		0·190		Very sultry all the morning, heavy sand storm 4 P. M.
		0·165		rain in the evening.
		0·465		Dust storm rain in the evening.
		3·380	●	Rain 10 P. M.
		1 265		Smart shower with thunder 6 A. M. and do. at 6 P. M.
		0·700		Steady rain at night. } 3 days supply to Tanks.
				do. do. }
				Strong westerly breeze; overcast. Thermometer Madras Observatory Maximum, 103.
				do. do. 104.
		0·465	☽	Rain at night. Therm. in Subs. rent at Madras 112.
		0·325		do. and all from the E. this Month
		Total.		
		5.275	In 15 Days.	

	Laul Baugh	High Ground
Mean Monthly Temperature.............	83·1	
Maximum..........................	95·	
Minimum..........................	69·	
Mean diurnal Range....................	17·7	
Monthly Range........................	26·	
Mean of observations of Dry Bulb inside House at 9 30 A. M. and 3.30 P. M...	......	80·
,, Depression of wet at do. do.	......	9·3
,, Dew Point. at do. do.	......	68·
,, Evaporation Force of at do.	......	·
,, Humidity. at do. do.	......	·68

Barometer were more carefully taken than before.

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JU

Month and Date.	*Standard Barometer.* Mean of observations at 9.30 A. M. and 3.30 P. M	Diurnal Range.	*Standard Thermometers.* Inside House on the "High Ground." Dry Bulb at 9 30 A. M.	Depression of wet at do.	Dry Bulb at 3 30 P. M.	Depression of wet at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·88	·08			80	10	65·	·62	91	74	
2	·89	·1			80	9	66·5	·65	90	71	
3	·82	·08			81	11	64·5	·59	90	75	
4	·80	·08			80	9	66 5	·65	87	70	
5	·79	·1			80	8	68·	·68	88	69	
6	·80	·12			80	9	66·5	·65	86	72	
7	·79	·10			79	8	67·	·68	82	71	
8	·73	·14			78	8	66·	·68	84	70	
9	·71	·1			76	4	70·	·82	77	69	
10	·73	·1			76	4	70·	·82	76	69	
11	·72	·08			75	4	69·	·82	80	68	
12	·74	·08			76	4	70·	·82	82	70	
13	·76	·08			76	4	70·	·82	82	70	
14	·82	·08			76	5	68·5	·78	82	68	
15	·81	·1			76	7	65·5	·71	83	69	
16	·78	·08			76	8	64·	·68	84	70	
17	·76	·08			77	9	63·5	·64	84	69	
18	·77	·1			77	8	65·	·68	85	71	
19	·76	·12			75	6	66·	·75	84	69	
20	·78	·12			75	5	67·5	·78	84	72	
21	·75	·1			76	5	68·5	·78	84	70	
22	·78	·08			75	5	67·5	·78	81	70	
23	·78	·12			76	6	67·	·75	85	72	
24	·84	·08			77	8	65·	·68	86	73	
25	·86	·08			77	9	63·5	·64	84	68	
26	·84	·08			77	10	62·	·61	82	70	
27	·87	·1			77	9	63·5	·64	83	71	
28	·85	·1			75	5	67·5	·78	84	68	
29	·84	·12			75	6	66·	·75	86	67	
30	·80	·22			74	5	66 5	·78	80	69	

Monthly Means.

	26·8	0·1	73·5	4·5	77·0	6·9	66·5	·72	83·0	70·1	

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NE.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	Wind. Whewell's. General Direction.	Rain. Crossley's Inches and tenths.	Moon. Phases of.	
		9·095		Thunder and little rain about 4 P. M.
		0·005		
			○	
				Wind variable and gradually veering to the west.
		0·090		
				1st Day of S. W. Moonsoon at Ootacamund.
		0·005		
		0·515		Rain during afternoon.
		0·010		Little rain do.
			☾	
		0·280		Rain in afternoon.
		0.010		do.
				Very High Wind.
				do.
				do.
		0·040		Three Months supply in Northern Talooks.
		1·645	●	Rain at night, 1 Month supply to tanks about Bangalore.
			☽	
		0·295		Smart shower in the afternoon.
		0·005		Little rain in the afternoon.
		0·040		Little rain in the morning.
		Total. 3·055	in 13 Days.	

	Laul Baugh	High Ground
Mean Monthly Temperature...........	77·	
Maximum............................	91·	
Minimum............................	68·	
Mean diurnal Range.................	13·8	
Monthly Range......................	23·	
Mean of observations of dry Bulb inside House at 9.30 A. M. and 3.30 P. M....	.....	75·2
„ Depression of wet at do. do..	......	5·7
„ Dew Point. at do. do..	......	66·7
„ Evaporation Force of at do..	......	
„ Humidity at do. do..	......	·76

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JU

Month and Date.	Standard Barometer. Mean of observations at 9.30 A. M. and 3.30 P. M.	Standard Thermometers. Inside House on the "High Ground." Diurnal Range.	Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3·30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·77	·1			75	5	67·5	·78	79	69	
2	·75	·1			75	6	66·	·75	81	70	
3	·76	·08			76	8	64·	·68	82	70	
4	·78	·08			76	7	65·5	·71	82	70	
5	·80	·08			76	8	64·	·68	82	69	
6	·83	·06			77	10	62·	·61	83	69	
7	·85	·06			76	8	64·	·68	80	69	
8	·86	·08			75	8	63·	·68	83	68½	
9	·87	·1			76	10	61·	·61	81	68	
10	.85	·1			76	9	62·5	·64	82	68	
11	.83	·1			75	8	63·	·68	78	67	
12	·81	·1			75	7	64·5	·71	77	68	
13	·79	·1			75	6	66·	·75	79	69	
14	·77	·1			74	5	66·5	·78	81	68	
15	·75	·1			75	7	64·5	·71	80	68	
16	·77	·1			74	7	63·5	·71	77	68	
17	·79	·1			76	9	62·5	·64	82	69	
18	·81	·1			77	10	62·	·61	84	70	
19	·81	·1			77	11	60·5	·58	83	67	
20	·82	·1			77	10	62·	·61	84	71	
21	·81	.1			76	8	64·	·68	83	69	
22	·80	·08			76	8	64·	·68	83	69	
23	·80	·08			76	8	64·	·68	84	68	
24	·80	·1			75	9	61·5	·64	81	69	
25	·81	·1			75	9	62·5	·64	82	68	
26	·80	·1			75	8	63·	·68	80	70	
27	·81	·08			72	4	66·	·82	75	67	
28	·81	·1			73	5	65·5	·78	74	68	
29	·80	·1			75	7	62·5	·71	81	67	
30	·81	·1			75	7	62·5	·71	83	69	
31	82	·08			75	8	61·	·68	81	69	
Monthly Means.											
	26·8	0·09	72·3	4·7	75·4	7·7	63·6	·69	80·9	68·7	

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LY.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	Wind. Whewell's. General Direction	Rain. Crossley's Inches and tenths.	Moon. Phases of.		Deaths by Cholera in Cantonment. European.	Deaths by Cholera in Cantonment. Native.
4	S. s. w.	0·26		Little Rain in afternoon.		
60	,, w	0·020	○			
44	s. by w.					
60	s. s. w.					
56	,,					
68	w. s. w.					
72	s.wbyw			Very High Wind.		
56	,,			do.		
80	,,			Cholera commenced in the Cantonment.	1	
72	,,		☾			
76	w. s. w.	0 040				
76	,,	0·035		Little rain at Night.		1
44	,,	0·230		do.		
60	,,	0·050		do.	1	6
68	s.wbyw	0 070			......	3
48	,,	0·035			......	2
72	,,				......	2
48	,,	0·110	●		.....	14
60	,,				.....	16
20	,,			Little rain Evening.	......	11
60	w. s. w.	0·075		Rain. 2. A. M.	2	9
76	,,			Very high wind occasionally almost due South, all this month. Sky generally overcast heavy rain often threatened but rarely fell, Cholera broke out severely into Cantonment but mildly in the Pettah; It was severe in the Baithmanglum, Colar, Moolwagle and Baigoor Talooks. In many Talooks of this Division the Raggy has not yet been sown; and what was sown, has withered from the drought.		28
40	,,	0·235			1	9
40	,,					17
72	,,	0·005	☽		1	19
80	,,	0·005				20
132	,,				2	48
88	,,					58
20	,,					
20	s.w.					
16	,,			*Total.*	8	263
		Total. 1·110	in 13 Days.			

	Laul Baugh	High Ground
Mean Monthly Temperature...	74·8	
Maximum........	84	
Minimum...........	67·	
Mean diurnal Range....	12·2	
Monthly Range	17·	
Mean of observation of Dry Bulb inside-House, at 9.30 A. M. & 3.30 P. M.	......	73·8
,, Depression of wet at do. do.	......	6·2
,, Dew Point. at do. do.	......	65·
,, Evaporation Force of at do.	......	
,, Humidity at do. do.	......	·75

AU

Month and date.	Standard Barometer. Mean of Observations at 9.30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Inside House on the "High Ground." Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·82	.08			75	7	64·5	·71	80	70	
2	·82	.08			74	7	63.5	·71	81	68	
3	·81	·1			75	7	64·5	·71	80	69	
4	·81	·1			75	7	64 5	·71	81	67	
5	·79	·1			74	6	65·	.75	79	68	
6	·79	·1			74	5	66·5	·78	81	68	
7	·78	.08			75	8	63·	·68	81	67	
8	·80	·08			75	7	64·5	·71	83	67	
9	·85	·1			75	6	66·	·75	86	69	
10	·85	·1			76	8	64·	·68	89	71	
11	·84	·12			76	8	64·	·68	86	69	
12	·78	·12			77	8	65·	·68	85	68	
13	·79	·06			76	7	65 5	·71	81	67	
14	·81	·06			75	6	66·	·75	82	67	
15	·83	·1			76	8	64·	·68	84	70	
16	·81	·1			77	8	65·	·68	82	68	
17	·79	·1			76	6	67·	·75	83	69	
18	·81	·1			75	5	67·5	·78	82	70	
19	·84	·12			74	4	68·	·82	82	68	
20	·84	·08			77	6	68·	·75	84	67	
21	·85	·14			76	4	71·	·82	85	70	
22	·84	·12			76	4	71·	·82	82	72	
23	·86	·08			76	5	68·5	·78	82	71	
24	·87	·1			76	4	71·	·82	79	68	
25	·89	·1			76	4	71·	·82	81	68	
26	·89	·1			76	5	68·5	·78	81	67	
27	·91	·1			76	4	71·	·82	85	69	
28	·90	·12			75	4	69·	·82	80	70	
29	·88	.12			74	2	71·	·91	80	69	
30	·85	.1			73	2	70·	·91	81	70	
31	·83	·1			73	3	68·5	·86	79	70	
Monthly Means.											
	26·8	00·9	72·5	4·3	75·3	5·6	6·7	82·2	80·0	68 7	

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GUST.

Wind. Whewell's. Horizontal movement in 24 Hours in Miles.	Wind. Whewell's. General Direction	Rain. Crossley's. Inches and tenths.	Moon. Phases of.	
40	W.S.W.		○	
60	W.bys.			
76	,,			Very high wind.
92	,,			Do.
104	,,	0·065		Rain 3 P. M.
80	,,	0·190		Do.
44	W.			
76	W.bys			
92	W.S.W.			
54	,,		☾	
40	W.	0·005		Smart shower from 5 to 6 P. M.
68	,,	0·320		
76	,,	0·050		
80	,,			
72	,,			
64	,,	0 030		Smart shower 5. P. M. } Wind variable.
48	,,	0·025	●	}
20	W.N.W.	0 870		}
24	,,	0·295		Rain 3 P. M. & during night. }
8	,,			Heavy rain 3. P. M.
4	,,			
4	,,	0.330		Rain 5· P. M.
8	N. W.	0 680	☽	Do. and night.
4	,,	0·145		Do.
32	,,	1.925		Do.
8	W.N.W.	2.265		Heavy rain P. M. and during night.
12	N. W.	0.035		Do.
4	W.S.W.	1.085		Do.
72	W.by.S	0 153		Do. } Wind remarkably steady;
40	W.by.S	0.440		Do. } These very high winds
48	W.by.S	0.305	○	Do. } generally only blow from
				Do. } about 6 A. M. to 5 P. M.
		Total.		
		9·215	in 19 Days.	

Deaths by Cholera in Cantonment. European.	Deaths by Cholera in Cantonment. Native.
4	56
10	65
2	23
1	15
1	30
1	22
1	24
1	31
	19
	12
	7
	11
	4
	5
1	18
1	7
	4
	1
	4
1	1
	4
	6
	7
	4
	1
	4
	4
2	2
	0
1	0
Total. 23	392

	Laul Baugh	High Ground
Mean Monthly Temperature	75·5	
Maximum	89·	
Minimum	67·	
Mean diurnal Range	13·5	
Monthly Range	22·	
Mean of observations of Dry Bulb inside House at 9.30 A. M. & 3.30 P. M.	......	73·9
,, Depression of wet at do. do.	.... .	5·
,, Dew Point. at do. do.	......	66 5
,, Evaporation Force of at do.	.....	
,, Humidity. at do. do.	......	·78

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SEPTEM

Month and Date.	Standard Barometer. Inside House on the "High Ground." Means of observations at 9.30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3·30 P. M.	Depression of wet, at do.	Dew Point from the 3.30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·81	·1			74	5	66·5	·78	81	70	3
2	·81	·1			74	6	65·	·75	79	69	3
3	79	·1			74	5	66·5	.78	77	67	4
4	·81	·1			74	6	65·	·75	77	66	3
5	·81	·1			74	6	65.	·75	78	67	4
6	·83	·1			75	6	66·	·75	80	68	4
7	·85	·1			75	6	66·	·75	82	69	3
8	·82	·12			75	5	67·5	·78	81	71	3
9	.82	.12			76	5	68·5	·78	83	70	4
10	·86	·12			75	5	67·5	·78	80	68	3
11	·88	·12			75	4	69.	·82	81	69	5
12	·86	·12			75	4	69·	·82	81	71	4
13	·84	·12			74	3	69·5	·86	80	67	5
14	·86	·12			73	3	68·5	·86	80	68	4
15	·84	·12			73	3	68·5	·86	80	68	3
16	·83	·1			74	5	66·5	·78	77	67	5
17	·84	·08			74	5	66.5	·78	77	67	5
18	·85	·1			74	6	65.	·75	78	67	4
19	·85	·06			74	6	65·	.75	77	68	2
20	·87	·1			76	9	62·5	·64	81	69	5
21	·89	·1			75	8	63·	·68	82	68	7
22	·89	·1			76	9	62·5	·64	83	71	8
23	·86	·12			77	10	62·	·61	82	70	8
24	·88	·12			76	10	61·	·61	82	71	7
25	·86	·12			76	9	62·5	·64	82	72	4
26	·81	·1			77	9	63.5	·64	83	69	2
27	.79	·1			76	7	65·5	·71	77	68	0
28	·80	.08			76	7	65·5	·71	77	67	1
29	·83	.1			76	8	64.	·68	82	67	8
30	.82	·08			76	9	62.5	·64	84	71	9
MONTHLY MEANS.	26·8	0·10	71·5	3·7	75·0	6·3	65·5	·74	80·1	68·7	4 3

BER.

	European & Eurosians.	Natives.
N. B. Total Deaths by cholera in Cantonment from 10th July to 30th September, 1861.	31.	690.
Do. in Bangalore Pettah during same period.	0	106.
Do. in Talooks of the Bangalore Division.	0	656.
Total.	31	1361.

Wind. Whewell's. Horizontal movement in 24 Hours in Miles.	Wind. Whewell's. General Direction	Rain. Crossley's. Inches and tenths.	Moon. Phases of.		Deaths by Cholera in Cantonment. European.	Deaths by Cholera in Cantonment. Native.
20	w.	0·625		The rain fell before Sun rise.		
32	w.s.w.	,,		Heavy and continued rain from 4 to 6 P.	,,	4
28	w.bys.	1·640		M. and little during night.	,,	
60	w.s.w.	,,		Slight shower 4 P. M.	,,	5
68	s. w.	,,			,,	1
68	w.s w.	0·015		Slight shower 4 P. M.	,,	2
40	w.	0 005		Do. 3 P. M.	,,	5
32	w.bys.	,,	☾	Thunder 5 P. M.	,,	1
24	w.s.w.	0 055		After noon showery; very heavy rain, with	,,	1
32	s. w.	1·580		thunder and lighting from 6 to 6.30 P. M.	,,	
48	w.	0 270		Do. do. from 8 to 8.30 P. M.	,,	
	w.N.w	,,			,,	
	,,	1·105		Rain in afternoon.	,,	
	w.	1.670		Very heavy rain about 5. P. M. 1. 20 in-	,,	3
	w.	0 035	●	ches fell in 15 Minutes guaged by 4 instru-	,,	4
	w.byN	0.455		ments.	,,	
	w.N.w	0 045		Showery, commencing at noon, (high	,,	1
	w.byN	0·010		wind previously.)	,,	
44	w.	,,		Little rain evening.	,,	
12	w.N.w	,,		Showery commencing 9. A. M.	,,	
40	,,	,,		Shower in afternoon.	,,	
4	,,	0·005	☽	Do.	,,	2
32	N.N.w	0 010		Do.	,,	
32	N. w.	,,		Do.	,,	
24	,,	0·025		Clouding over to the Eastward.	,,	
12	,,	1·955		Heavy rain from 8 to 10. P. M. with	,,	
8	w.N.w	0·015		short intervals.	,,	3
52	w.	,,		Smart showers during afternoon.	,,	1
64	,,	,,		Wind variable inclining to East.	,,	
16	,,	,,	○	Heavy dew.	,,	
				Hot and sultry.	,,	1
				Total.		35

	Total		Laul Baugh	High Ground
	9·550 in 18 Days.	Mean Monthly Temperature............	74·4	
		Maximum..............................	84·	
		Minimum,..............................	66·	
		Mean diurnal Range....................	11·4	
		Monthly Range.........................	18·	
		Mean of observations of dry Bulb inside House at 9.30 A. M. & 3.30 P. M. ..	......	73·3
		,, Depression of wet at do do	......	5·
		,, Dew point. at do do	......	65·
		,, Evaporation Force of at do do	......	·19
		,, Humidity at do do	......	·78

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OCTO

Month and Date.	Standard Barometer. Mean of observations at 9·30 A. M. and 3.30 P. M.	Diurnal Range.	Standard Thermometers. Inside House on the "High Ground." Dry Bulb at 9·30 A. M.	Depression of wet, at do.	Dry Bulb at 3·30 P. M.	Depression of wet, at do.	Dew Point from the 3·30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O being all cloud 10 pure Sun shine.
1	26·82	·08			77	7	66·5	·71	83	72	8
2	·84	·08			77	8	65·	·68	81	71	3
3	·87	·1			77	7	66·5	·71	85	73	7
4	·88	·12			77	6	68·	·75	86	71	8
5	·90	·12			77	5	69·5	·79	82	70	7
6	·92	·12			76	5	68·5	·78	84	68	7
7	·94	·12			75	5	67·5	·78	81	69	7
8	·96	·12			75	6	66·	·75	80	72	1
9	·91	·1			76	8	64·	·68	82	71	9
10	·89	·1			77	12	59·	·56	83	70	8
11	·87	·1			77	11	60·5	·58	90	72	8
12	·89	·1			77	11	60·5	·58	85	70	9
13	·91	·1			77	9	63 5	·64	85	72	8
14	·90	·12			77	8	65·	·68	84	71	8
15	·88	·12			76	7	65·5	·71	83	71	8
16	·86	·12			75	5	67·5	·78	85	72	5
17	·89	·1			75	5	67·5	·78	83	70	8
18	·85	·1			76	6	67·	·75	80	72	2
19	·84	·08			75	5	67·5	·78	75	69	0
20	·81	1			73	3	68.5	·86	73	68	0
21	·77	·1			70	2	67·	·91	70	60	0
22	·77	·1			67	2	33·4	·32	69	65	0
23	·77	·1			70	3	65·5	·86	76	69	1
24	·76	·12			72	3	67·5	·86	81	61	4
25	·85	·1			75	6	66·	·75	83	71	8
26	·87	·1			75	8	63·	·68	84	69	9
27	·88	·12			76	7	65·5	·71	80	68	8
28	·89	·1			77	12	59·	·56	85	68	10
29	·89	·1			76	10	61·	61	81	69	5
30	·88	·12			77	12	59·	·56	81	71	8
31	·91	·1			76	10	61·	.61	79	66	9
Monthly Means.	26·9	0·1	72·7	4·2	75·2	6·9	63·9	·70	81·3	69·6	5·9

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Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	Wind. Whewell's. General Direction.	Rain. Crosseley's. Inches and tenths.	Moon. Phases of.	
24	W.			Thunder and Lightning from 4 to 10 P. M. and heavy clouds to the West ward.
16	N.N.W			Thunder and Lightning in afternoon and evening from N. E. few drops of rain at 6. P. M.
16	W.			
8	W.			Do. with rain 8. P. M. from Southward very sultry.
12	W.S.W.	0·940		Very sultry, rain at night.
8	,,	0·900		Do. Lightning all round; Rain in showers from 10 P. M. to 4. A. M. of the 7th.
16	W.	0 775	○	
20	W.N.W	0·015		Sultry and oppressive, showery afternoon, lightning all round at night, and rain.
32	N.N.W			
28	N.			Steady rain from 6 to 7. A. M.
16	N N.E.			Lightning to the Eastward in the evening; wind shifting
8	S. E.			1st day of North East Monsoon.
28	,,			Lightning all round.
8	,,		●	Do.
12	,,	0 035		Very sultry rain at night.
32	,,	0·175		Slight showers in the morning, Lightning in evening.
62	,,			Do. morning and afternoon.
44	,,	0·030		Heavy shower during night.
20	E. S. E.	0 075		Slight showers from 6 A. M. to noon.
4	E.	0·020		Drizzle all day.
32	N E.	0·435	☾	Heavy and steady rain from 6.30 to 8.30 A. M.
16	E.N.E.	0·055		Rain in Morning. Heavy rain at night.
12	E.	,,		Slight rain in morning.
20	S. E.	0·595		Do. heavy rain afternoon and night.
28	S. E.	0·005		
36	S. S. E.	0 015		Little rain in evening.
4	S. E.	0·295		Do.
4	E.	,,		
4	E.N.E.	,,		
16	N.	,,		Fog; the 1st "cold weather" morning.
12	N.	,,	☽	
		Total. 4·465 in 15 Days.		

	Laul Baugh	High Ground
Mean Monthly Temperature..............	75·4	
Maximum..............................	·90	
Minimum..............................	·60	
Mean diurnal Range....................	11·7	
Monthly Range.........................	·30	
Mean of observations of Dry Bulb inside House at 9.30 A. M. and 3 30 P. M....	......	73·9
,, Depression of wet at do do...	......	5·6
,, Dew Point at do do...	......	65·7
,, Evaporation Force of at do....	......	·19
,, Humidity at do do...	......	·76

NOVEM

Month and Date.	*Standard Barometer.* Inside House on the "High Ground." Means of observations at 9.30 A.M. and 3.30 P.M.	*Standard Thermometers.* Diurnal Range.	Dry Bulb at 9.30 A.M.	Depression of wet, at do.	Dry Bulb at 3.30 P.M.	Depression of wet, at do.	Dew Point from the 3.30 P.M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·91	·1			75	14	54·	·51	80	62	6
2	·90	·12			74	14	53·	·50	80	61	10
3	·90	·12			73	13	54·5	·52	80	60	10
4	·91	·1			72	10	57·	·61	81	60	10
5	·93	·1			72	11	55·5	·58	81	62	10
6	·93	·1			72	11	55.5	·58	80	60	9
7	·96	·08			73	13	54 5	·52	79	59	10
8	·97	·06			73	13	54·5	·52	80	59	10
9	·98	·08			73	13	54·5	·52	79	59	10
10	27.00	08			73	13	54·5	·52	81	61	9
11	·00	·12			73	11	56·5	·58	82	64	10
12	.00	·12			75	10	60·	·61	81	65	8
13	·00	·12			75	90	60·	·61	84	68	8
14	26·96	·12			75	12	57·	·55	79	64	8
15	·93	·1			75	10	60·	·61	78	65	10
16	·90	·08			73	13	54 5	·52	78	57	10
17	·90	08			73	16	49.	·45	79	58	8
18	·91	1			74	14	53·	·50	80	62	10
19	·89	·1			75	16	51·	·45	83	63	10
20	·91	·1			75	15	52·5	·48	82	66	10
21	·96	·12			74	14	53·	·50	83	68	10
22	·95	·1			75	13	55 5	·53	81	66	8
23	·98	·08			73	6	64·	·74	81	67	3
24	27·00	·08			74	8	62·	·67	84	67	9
25	·01	·1			75	10	60·	·61	83	66	10
26	.01	·1			74	8	62·	·67	82	62	10
27	·00	·12			73	8	61·	·68	80	65	8
28	26·99	·11			73	9	59 5	·64	79	62	8
29	·97	·1			73	8	61·	·68	80	67	9
30	·96	·12			73	9	59·5	·64	82	62	6
MONTHLY MEANS.											
	26·9	0·1	9·1	73·7	11·5	56·6	57·	80·7	62·9	8·1	

BER.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles.	Wind. Whewell's. General Direction.	Rain Crossley's Inches and tenths.	Moon. Phases of.	
12	N.			
8	,,			
16	N. N.			
16	E. N E.			
24	S. E.			
12	E.		☾	Wind variable and shifting.
4	N.			
8	N. E.			
4	,,			
4	N. N. E.			
2	,,			
2	,,			
4	,,		●	
4	,,			Dry cool, High Wind.
4	,,			do.
12	,,			do.
20	,,			Dry cold High Wind.
8	,,			
8	,,			Fog 6. A. M.
12	S. E.		☽	Slight do and overcast.
12	,,			Overcast; Smart shower 5. P. M. at Jungumcottah.
4	,,	0·030		
4	,,			Very foggy morning.
84	,,			Fog in morning.
56	E., S. E.			Overcast.
40	,,			
60	,,			
60	,,		○	
40	,,			
80	E. S. E.			
		Total. 0·030	in 1 Day.	

Memo. The latter rains having failed the out turn of the Dry crops will not be more than probably ½ an average yield.

	Laul Baugh	High Ground
Mean Monthly Temperature	71·8	
Maximum	84·	
Minimum	57·	
Mean diurnal Range	17·8	
Monthly Range	27·	
Mean of observations of dry Bulb inside House at 9.30 A. M. and 3.30 P. M.	......	71·9
,, Depression of wet at do. do.	......	10·3
,, Dew Point. at do. do.	......	57·
,, Evaporation Force of at do.	......	·30
,, Humidity at do. do.	......	·61

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DECEM

Month and Date.	*Standard Barometer.* Inside House on the "High Ground." Mean of observations at 9.30 A. M. and 3.30 P. M.	Diurnal Range.	*Standard Thermometers.* Dry Bulb at 9.30 A. M.	Depression of wet, at do.	Dry Bulb at 3.30 P. M.	Depression of wet, at do.	Dew Point from the 3·30 P. M. observations.	Humidity do.	In Verandah of the House of the Supt. of the Govt. Gardens. Max. (Self registering.)	Min. (Self registering.)	Portion of sky clear. O. being all cloud 10 pure Sun shine.
1	26·94	·12			73	7	62·5	·71	83	63	9
2	·91	·1			72	8	60·	·67	79	61	10
3	·91	·1			72	8	60·	·67	81	60	10
4	·93	·1			72	7	61·5	·71	79	60	10
5	·89	·1			71	5	63·5	·78	80	58	9
6	·88	·12			72	6	63·	·74	77	60	5
7	·85	·1			70	3	65·5	·86	74	65	0
8	·88	·08			68	2	64·8	·90	69	64	0
9	·93	·06			70	3	65·5	·86	75	62	0
10	.97	·1			70	5	62·5	·78	79	64	7
11	.96	·08			69	4	62 6	·81	78	62	9
12	·95	·1			71	6	62·	·74	80	63	9
13	·94	·08			72	7	61·5	·71	80	65	9
14	·94	·08			72	8	60·	·67	81	66	10
15	·96	·08			72	7	61·5	·71	81	61	9
16	·97	·1			71	6	62·	·74	79	60	9
17	·96	·08			71	7	60·5	·71	79	62	10
18	·94	·08			70	10	55·	·61	80	64	9
19	·95	·1			70	10	55·	·61	80	62	9
20	·97	·1			71	11	54·5	·58	81	63	10
21	27·01	.1			71	10	56·	·61	81	62	10
22	·03	·1			71	10	56·	·61	80	61	9
23	·02	·12			71	11	54·5	·58	80	63	10
24	·01	·1			71	10	56·	·61	82	65	8
25	26·99	·1			71	10	56·	·61	83	62	9
26	27·00	·08			73	11	56·5	·58	81	59	10
27	·01	·1			74	11	57·5	·58	80	61	10
28	·01	·1			75	13	55·5	·53	79	62	8
29	26·99	·1			74	12	56·	·55	80	63	6
30	27 01	·1			73	10	58·	·61	81	62	10
31	·01	·1			74	12	56·	·55	80	61	10
MONTHLY MEANS.	27·	0·	67·5	6·1	71·5	8·1	59·4	·68	79·4	62·1	8·2

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BER.

Wind. Whewell's. Horizontal movement in 24 Hours, in Miles	Wind. Whewell's. General Direction.	Rain. Crossley's. Inches and tenths.	Moon. Phases of.
40	S. E.		
48	"		
28	"		
32	E. S E.		
28	"		
28	"		
32	E.	0·065	
80	"	0·145	
104	E SE.		●
100	S. E.		
40	"		
12	"		
80	"		
32	E.		
20	"		
28	"		
44	"		
28	E by S.		
64	E.		
60	E. S E.		
48	"		
60	"		
28	S.E.		
60	"		
92	"		
40	"		
28	"		○
60	"		
72	"		
88	"		
112	"		
		Total. 0·210 in 2 Days.	

Dr. Oswald writes that a slight rumbling shock of an earth-quake was felt at Sheemoogah at 9. P. M. this day, and the Heavens at the same time were lighted up as if by the most brilliant lightning, this was not felt at Soorub where his encampment was, but the Peons out side reported the next morning, that the Jungles became suddenly as light as day; the village people about corroborated this. A party of travellers at Terrikerray (24 Miles from Sheemoga) saw the brilliant light at the same time; and felt the shock of the earth-quake.

Cool dry wind.
do
Clouded over in afternoon.
Dull and threatening.
Little rain in afternoon.
Drizzle all day. }
do. } on Nundy Droog.
Driving mist. }
Clear and dry.
do.
do.
Very high wind.
do.
do.
do.
High wind.
do.
do.
do.
do.
Thick fog in morning, moderate wind.
Very thick fog in do. } In many places in England the Thermometer was 8 degrees below Zero(4 feet from ground)&on the grass it was 13.8 below & 32.5 below the average of 43 years.
do.
Fog in morning.
do.
Light fleecy clouds half obscuring the sun shine.
High dry wind. } Mean of Therm: for the last 6 months
do. } 73·8 Rain during do. (in 68 days) 24·55.

	Laul Baugh	High Ground
Mean Monthly Temperature	70 7	
Maximum	83·	
Minimum	58·	
Mean diurnal Range	17 3	
Monthly Range	25·	
Mean of observation of Dry Bulb inside House, at 9.30 A. M. & 3.30 P. M.	......	69 5
" Depression of wet at do do	......	7·1
" Dew Point. at do do	......	57·9
" Evaporation Force of at do	.....	·23
" Humidity at do do	......	·68

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ABSTRACT OF TEMPERATURE AND COMPARATIVE STATEMENT.

STATION.		Monthly means.												Annual.									Rain.	
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Maximum.	Minimum.	Mean diurnal Range.	Mean Monthly Range.	Annual Range.	Mean dew Point.	Mean Humidity complete saturation being 1.	Mean force of Evaporation.	Mean Annual temperature.	Depth in inches, &c.	Days of Rain fall.
Laul Baugh Verandah mean of Maximum and Minimum obervations.	1860.	70·4	76·3	82·1	84·8	83·1	77·	74·8	75·5	74·4	75.4	71·8	70·7	97	55·5	16·1	25·4	41·5	„	„	„	76·4	33·4	102
Do. Do. Do.	1859.	69·1	73·2	78·8	78·4	81·7	76·6	77·	74·7	75·7	75·4	72·5	71·1	97	55·5	15·5	24·1	41·5	„	„	„	75·3	25·5	119
Mean of 2 observations at 9.30 A. M. and 3.30 P. M. Inside House on "the High Ground."	1860.	69·2	74·8	79·3	80·6	80·	75·2	73·8	73·9	73·3	73·9	71·9	69·6	86	67	„	8·9	19·	63·2	·69	·26	74·6	„	„
Do. Do. Do.	1859.	70·9	73·6	77·4	77·7	79·6	75·6	74·2	74·1	74·4	74·2	71·4	71·	84	65	„	9·8	19·	64·8	·74	·23	74·5	„	„
Mean of obs: at 9.30 A. M. at Do.	1860.	67·8	72·5	77·5	78·5	78·	73·5	72·3	72·5	71·5	72·7	70·	67·5	81	65	„	5·2	16·	64·	·74	·21	73·1	„	„
Do. Do. Do.	1859.	68·9	71·6	75·9	76·4	78·	74·2	73·1	72·6	72·6	72·9	70·1	69·5	82	65	„	6·4	17·	65·	·76	·19	73·	„	„
Bangalore Hospital Mean of the observations at Noon for 6 Years........		73·	76·2	83·7	86·	85·	80·5	78·5	77·5	77·2	77·4	74·3	74·3	„	„	„	„	„	„	„	„	78·8	„	„
Bangalore computed from Hegne's Tracts..	1805-6.	72·	76·8	78·	81·9	83·2	74·9	74·3	73·4	74·8	72·8	71·6	67·6	„	„	„	„	„	„	„	„	75·1	„	„
Madras observatory.	1860.	77·5	77·7	81·7	85·3	90·4	89·	87·1	85·6	83·7	81·	77.4	76·4	106	62·9	14·4	„	43·1	70·7	·70	„	82·5	27·6	78
Mean of the whole Earth from "Dove's" calculation.		54·3	„	„	„	„	„	62·4	„	„	„	„	„	„	„	„	„	„	„	„	„	„	„	„
Royal observatory at Greenwich mean of 79 Years.		35·7	38·2	40·9	45·7	52·6	58·	61·3	60·5	56·3	49·3	42·4	38.8	„	„	„	„	„	„	„	„	48·3	„	„

MEMO—The Instruments in the "Laul Baugh," or Government Gardens, are the same as were used last year, and are suspended 5 feet from the ground, in the Verandah of the Superintendent's House, were the direct rays of the Sun never reach them. They are self registering; of Negretti and Zambra's best make and are noted daily at 9 A. M.

2.- The Barometer is one of Casella's best standard ones No. 3900, with brass scales extending from the cistern, to the top of the Mercurial Column; [illegible] only are the readings to be depended upon; and it is for this reason that the annual

4. There is a great difference between the Maxima Minima of the months at the "High Ground," and the "Laul Baugh;" the latter observations are taken, with the Instruments exposed to the heated winds, while those at the High Ground are sheltered from them, by being inside an airy room: another reason of the difference is, that the Government Gardens are some 80 feet lower, and much more sheltered, than the exposed "High Ground."

5. From daily careful and regular observations between Noon and 5 P. M, extending over a period of nearly 3 months [during which time there were some days the hottest on record, and some quite Monsoonish] and from occasional observations at other times, I believe the hottest time of the day to be from about 3 to 4.30 P. M. according to season; and perhaps 3.30 P. M. may be set down as a fair average for the year: the mean temperature of the day appears to be reached about 10.30 A. M, and the lowest about an hour before sunrise.

6. The diurnal oscillations of the Barometer are regulated by the atmospheric wave, which is strikingly regular; the Maximum during the day, being reached about 9.30 A. M. and the Minimum about 3.30 P. M. the means being about 7.45 A. M.; and 0.25 P. M. It is I believe equally regular during the other 12 hours; but I cannot state this from personal observation; the range also is very regular and small the mean being a trifle more than 0.1—

7. The receiver of the Rain Gauge (Crossley's vibrating) was placed 4 feet from the ground, in an open space; and was daily noted. Rain does not often fall between sunrise and noon, and is most frequent about 4 to 7 P. M. This year nearly the average amount fell; but both the former and the latter rains having failed, the crops suffered.

8. The Wind Gauge (Whewell's) was placed on the top of the Chief Engineer's Office, and daily noted from 1st July. The portion of sky clear I only commenced to register on the 1st September; the No. denotes the amount of cloud, or Sun Shine, (on the average,) from 6 A. M. to 6 P. M. The amount of cloud at night I have not been able to note; but have observed that generally, the nights, or the early parts of them, are clear, although the afternoon may have been very much overcast; and this is especially noticeable in the months of April and May; (which is the season for thunder storms) Clouds then bank up heavily, and there is every appearance of heavy rain, but by 8 P. M. the sky is perfectly clear, and starry, and this is the case (which the occasional variation of a sand storm) for many days before rain actually falls.

9. The readings of the Instruments, (as observed,) are registered.

10. Bangalore is in Lat 12·58 N. and Longitude 77·39 E. The base of Commissioner's Flagstaff is 3030 feet above high water mark at Madras, and the mean annual temperature is 75 degrees Fahr: while that of Madras is 85, thus confirming the generally received opinion that a rise of 300 feet cause a fall in the Thermometer of one degree. The soil in the Bangalore Division is (except in the valleys,) generally of a red sandy loam, inclining to gravelly; formed by the disintegration of the Gneissose-Rocks, which are everywhere met with, in every stage of decomposition. The sound Rock may be described as a compact, finely foliated gneiss, with slaty cleavage, which renders it of great importance as an economic, and durable building material; and it has been, in the last 4 years, advantageously employed in the archwork of Bridges. According to the constitution of the Rock, the resulting earth is either kaolinitic, or lateritic,—looking; and of the former, some very refractory fire-clays have been made use of. To the west of the Division the prevailing Rock assumes a more porphyritic character; and to the south, a fossiliferous limestone has been discovered which is said to belong to the upper silurian group.

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GENERAL MEMORANDA ON RAIN FALL.

NAME OF PLACE.	Annual mean. Inches and tenths.	Annual mean. Days of rain fall.	Monthly mean. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Greatest annual fall.	Least Do.	No. of years from which mean is calculated.
Bangalore.........	35 4	77	0·3	0·2	0·5	1·4	5·1	3·	4·	5·9	6·3	6·	1·6	1·	55·1 in 1852.	15 9 in 1838.	Average of 23 Years.
Mysore.	29·4	52	0·1	0·2	0·3	2·6	5·	2·	2·7	2·5	4·4	6 4	2·1	1·	52·8 in 1852.	16·8 in 1840.	,, 13 ,,
Toomcoor.....	31·3	44	0·13	0·4	0 3	1·6	5·	2·5	3·	4·	5·6	7·8	1·	0·4	57·4 in 1852.	13· in 1838.	,, 22 ,,
Sheemoogah. ..	29·3	77	,,	0·3	0·2	1·8	4·	3·4	6·4	3·6	2·4	5·5	1·1	0·4	42·8 in 1852.	15·3 in 1855.	,, 15 ,,
Ootacamund. .. (Neilghery Hills.)	47·7	,,	0·2	0·4	1·	4·2	5·8	6·5	4·1	5·1	6·6	8·3	4·1	1·4			,, 7 ,,
Koteegherry... (Neilghery Hills.)	50·	,,	2·	3·	6	10·	2·	2·	4·	2·	2·	10·	2·	5·			,, 1 ,,
Dodabetta ..... (Neilghery Hills.)	81·7	,,	1·5	1·2	2·2	5·7	7·9	6·2	10·3	12·5	8·5	13·	8·	4·7	101·1 in 1847.	61· in 1858.	,, 12 ,,
Mercera..........	99·7	132	,,	,,	0 3	2·1	6·4	15·3	34·	23·4	7·5	9·1	1·5	0·1	119 4 in 1856.	79·6 in 1855.	,, 5 ,,
London..........	22·2	,,	1·5	·8	1·4	1·8	1·8	1 8	2·6	1·4	2·2	2·1	2·5	2·4			,, ,,
All England......	31·2	,,	,,	Spring·	4·8	,,	Summer.	6 6	Autumn.	7·4	,,	Winter.	5·9	,,	67·5	19·5	Several Years.

EVAPORATION.

Experiments at Bangalore in November and December 1859, weather generally bright and clear.	Mean of 12 days.
In a Tin Vessel 1 foot deep, and area of 1½ feet placed on the ground.	0·221 Inches.
Do. Do. 4 Inches deep and ½ foot area, buried to the ground level.	0·167 Inches.

LIGHTNING.

1856 May 13.	3 Persons struck by Lightning in Bangalore Pettah, 2 died.
	Some years ago 7 buildings in Bangalore, Cantonment, were struck at the same time.
1859 March 30.	In Goomnaickenpollium Talook,—1 many knocked down, and ear scorched.
,, May 18.	In Anaicul a man sitting under a tree was killed—Tree struck.
,, ,, 22.	Hoolioor Droog,—house struck; woman and grain inside, scorched.
,, ,, 22.	Baithmungalam,—1 man killed, no mark perceptible.
,, ,, 15.	Burra Balapoor,—1 man killed, on the High road.
1860 ,, 1.	Superintendent's Moonshee killed at Sheemoogah; large tree struck. Boy in tree killed.
,, ,, 11.	Davanhully Talook,—2 Bullocks killed inside house.
,, ,, 13.	3 Cocoanut trees struck in Bangalore Pettah.
,, ,, 1.	Do. in Maloor Talook.
1858 and 1859.	Chittledroog Division,—10 individuals, and 5 head of cattle, were killed by lightning.

The season of 1859 was an unusual one. No heavy rain fell, and only 25½ inches were registered, and this amount [which is much below the average] was distributed over 119 days, (average of 23 years 35·41 inches in 77 days) but though there was such a scanty supply in the Eastern parts of Mysore; the Western districts were well supplied, and the fall both on the Eastern and Western Coasts is said to have exceeded the average.

The year 1859 was thought hotter than usual, but the temperature of the year under Review was still higher.

J. PUCKLE,

SCIENTIFIC INTELLIGENCE.

REVENUE DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following Proceedings of the Board of Revenue, dated 28th November 1861, No. 6,593.

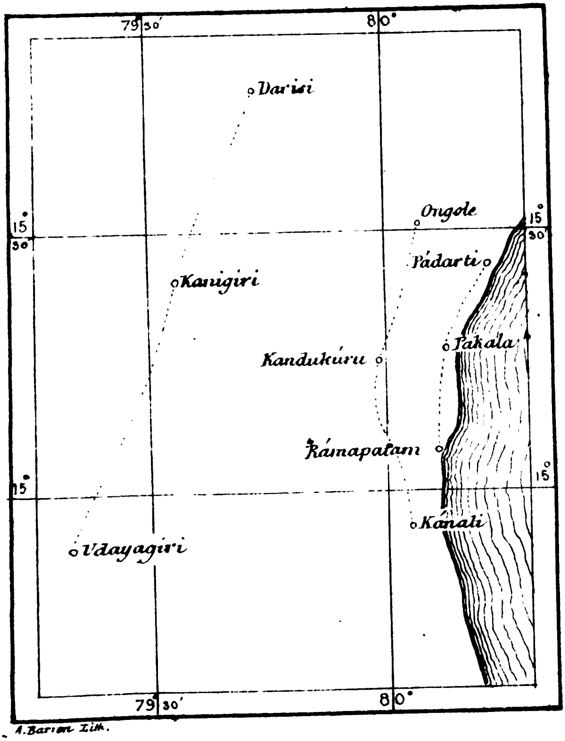
Read the following letter from J. W. B. DYKES, ESQ., Collector of Nellore, to W. HUDLESTON, ESQ., Secretary to the Board of Revenue, Chepauk, dated 9th November 1861, No. 233 :

SIR,

1. The rain report for October, which I have the honor to forward herewith, calls for special remark, as the fall on the 20th at Pakala is registered at 15·35 inches.

2. When two years ago, the fall of rain at Nellore was registered at 14 inches, considerable doubt was expressed as to the accuracy of the measurement, though the gauges kept by both the Revenue and Public Works Departments gave pretty nearly the same results; and this being the case, it is probable, that still less credence will be given to a fall of upwards of 15 inches in the 24 hours.

3. I give in the margin a sketch of the positions on the map of the stations where gauges are kept in the Northern Division of this District. And dividing these station into three lines, running North and South, the Board will observe that the corresponding stations on each line show a fall of rain in certain fixed proportions. For instance, the northern-most stations on



each line are Padarti, Ongole, Darisi; Padarti being on the coast Ongole 10 miles inland, and Darisi about 45; and at these three stations, the registered fall is, Padarti 14·91, Ongole 7; Darisi 3·75; or twice as much on the coast as ten miles inland, and four times, as 45 miles inland. Again, taking a line from east to west, about half a degree South, we have the stations of Pakala, Kandukuru, and Kanigiri, with much the same relative positions and distances as the above, and it might be said precisely the same proportions, viz., Pakala 15 35, Kandukuru 8·55 and Kanigiri 2·65. And if we take the Southern-most line of this Northern Division, which is pretty much on the 15° of latitude, we have, with a greatly decreased force, still the same proportions, viz., Ramapatam 7·2, Kanali 3·4, and Udayagiri 1·6, the relative positions and distances being again much the same as in the preceding groups, though in this instance the extreme inland station is South of the other two, whilst in the two former groups, it is in both cases a little to the North.

4. Of course the preceding figures may be all a mere coincidence; and it is quite possible the measures may be all alike erroneous, either of which suppositions would equally negative any inference to be drawn from the above singularly marked proportions; but I am not aware that the measures are erroneous. They were all prepared under the supervision of my predecessor Mr. Elton, who took much interest in every thing that could tend to throw a light on meteorology; whilst those who keep the accounts have been carefully instructed, and have very simple accounts to keep. And under these circumstances, I cannot but look on the rain report now submitted as a correct and reliable document, and as such throwing considerable light on the laws that regulated the very heavy fall of rain in the North of this District on the 20th ultimo.

Ordered to be submitted for the information of Government, and that copy be communicated to the Chief Engineer, the Conservator of Forests, the Government Astronomer, and the Inspector General Medical Department.

(A true Copy and Extract.)

(Signed) W. HUDLESTON,

Secretary.

ORDER THEREON, 4th January 1862, No. 5.

Communicated to the Government Astronomer.

(True Extract.)

(Signed) C. G. MASTER,

Deputy Secretary to Government.

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Notes on Dr. Moore's book concerning the Lost Tribes, and the Saxons of the East and of the West. By Rev. W. Taylor.

This book—with a startling title*—is perhaps divisible into two books; the one theological, with a theoretic inquiry after the missing ten tribes of the Beni-Israel; the other archæological, and presenting some singular views and statements, as to rock-inscriptions in the *lat'h* character, which Dr. Moore regards as exclusively *Bâuddha* in kind. These two portions do not appear like homogeneous parts of one whole. It is my impression that Dr. Moore began to write with Chap. 11 page 227, or thereabouts; and that the Chapters preceding were afterwards written, the better to make up a book A full review of the former portion would properly belong to a professedly religious publication: seeing that the author takes a high religious standing, and dilates on prophecy, whether fulfilled or unfulfilled, on his own proper and peculiar interpretation; wherein probably few will follow him. In this, the earlier part, there are some highly poetical and beautiful passages, yet indicating the predominance of a lively, and somewhat heated imagination—not the very best qualification, possibly, for decyphering inscriptions on rocks, or on stone pillars. As regards those inscriptions the whole effort appears to me to be a failure; for I question if Dr. Moore will carry any well informed reader along with him, throughout his entire course; and that there are hasty assumptions, on very slender grounds, must strike the attention of any one, who reads with a moderate portion of thought and carefulness.

In the ethnological and etymological portions of the book, the author appears to me to imitate the worst features in Bryant's Analysis of Ancient Mythology, and Wilford's various disquisitions in the Bengal Asiatic Researches. He even quotes the latter on the *Sacæ*, in the white island—meaning the Saxons in England—as if Wilford had never acknowledged the forgeries of his pundit. In Hindu mythology, and historical romance Dr. Moore is very deficient: for instance there are statements about *Ráma* that would have scarcely been pardonable at the close of the last century.

* The lost tribes and the Saxons of the East and of the West with new views of Buddhism, and translation of rock-records in India, by George Moore, M. D. &c. London 1861.

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Dr. Moore very properly distinguishes—as do the Hebrew writings—between the Beni-Israel of the ten tribes, and the *Yihùdìm,* or Jews of Judah and Benjamin. The book also contains some judicious observations on the foretold restoration to Palestine, as applicable not to the whole, but only to a part of the Beni-Israel; and concerning the tribe of Ephraim as the representatives of those who shall not return, but will probably, some day, renounce their idols. On the other hand, so far as I can see, his notion of finding Israelites among the Saxons in England, turns on an etymological quibble of Sharon Turner, in his History of the Anglo-Saxons: who could find no better derivation of the word Saxons than *Sakai* or *Sacae-suni.* This latter word in Sanscrit means *a Son*: but Mr. Turner, taking advantage of the Latin plural (*Saxoni*) turns *Sacae-suni* into Saxons in the plural number. Dr. Moore adopts this quibbling derivation. On that etymology, and on the mere supposition that when the *Sacae,* or Scythians, invaded the countries in which the ten tribes were located, these last joined the Scythians, as making head against common enemies, and that thenceforward both became one common people —rests the grand hypothesis of the book, that the Saxons were Beni Israel. Equally rapid, and unsolid, is an assumption that the Beni Israel, and the *Bâuddhas* are the same people. There is no proof, but merely probability urged; and, on the said derivation, and the alleged probability depends, let it be repeated, the important conclusion that the Saxons in England were descendants of the ancient Sacae, mixed up with Israelites of the ten tribes; and another conclusion also, that because *Buddha* bore the name of *Sakya* (or *Sacya-sinha*) and that a *Sacai*-era is now common in some parts of India—therefore the *Bauddhas*, or converted followers of Buddha, were of the mingled race of the Scythians, and the Beni-Israel. The whole is intended to joint in with a main discovery in the volume, that the *Bauddha*, or *lat'h* inscriptions are in the Hebrew language; though not in the square Chaldee character into which Dr. Moore professes to transliterate the said inscriptions—an operation that may call for a little further attentive examination.

On the book first coming into my hands I at once turned to page 232 for the alphabet. I found this to be, in the main, Mr. J. Prinsep's which in some important letters I know to be wrong; and the dif-

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ferences in Dr. Moore's alphabet do not correct what is erroneous. The vowel affixes are not found, in stone inscriptions, as Dr. Moore represents them to be The system of transliteration into the square Chaldee letter is open to objection, and the double letters of the Sanscrit, and other Indian alphabets, cannot be represented by two following Chaldee letters, except when the very short vowel *sheva* is quiescent. For instance *Shm* (which in Sanscrit would read *shma*) cannot be adequately represented by *shin* and *mem* as following letters, without vowel points. According to the points used the two letters would mean *a name* (sub.) or *thither*, (adv.) and, since so great a difference in those two letters depends on the vowel points, the reader will be prepared to appreciate a further remark as to the prevailing omission of vowel points in the sequel.

The first inscription given is preceded by the Bauddhist symbol termed *Dhamma*: it is a symbol as much so as the *svastica*, or any other conventional sign. Yet Dr. Moore finds in it the word *Godama*; and then represents this name in Chaldee letters as *Yihodamma* meaning as he states "god-like." But the transliteration of the hard syllable *go* into *Yiho* is, at the outset, of no great promise.

The inscription No. 1 contains seventeen consonants, each one carrying a vowel affix or prefix, and there are three dots (*anusvaram*) with the power of the nasal *m* or *n*. Dr. Moore transliterates these twenty syllabic or other signs, by thirty consonants, all of which require a vowel in order to their enunciation; but he only gives the vowel *o* over three letters. These three vowel-points are three *dots* on the head of the letters, it is true, but with different import, I conceive, from the three *anusvaras* of the *lat'h* letters. I am not perfectly certain of every *lat'h* letter in No. 1, but the reading I think is something like this.

Ram kauka saiyottasa tangam jado chalutto rāmam.

Dr. Moore's transliteration is: Yoh d m m l k k sh l n o y sh th gob m o l d r y d m m pho n h.

That the three first words may read "Godama (or† Johdama) king of Kash" may be; but there is nothing like that in the Bâuddhist

† Yohdama melech kash.

symbol and letters following in the inscription itself, even if read as far as *possible* by the aid of his own alphabet; seeing that the vowel marks which he gives in the alphabet, and those found in No. 1 are quite different.—Throughout the book there is a withholding of the vowel-points, which are necessary, in order to precision in any work, not otherwise well known; and throughout there is an apparent recklessness as to any corresponding number of consonants: both objections are fatal as to the correctness of the assumed translitera-tion.

Going back to a plate facing 215 is an inscription, which I take to be mortuary, containing thirteen consonants each one bearing a vowel. This piece Dr. Moore transliterates by twenty-four consonants, with only *two* vowels. The last word in the inscription is, without doubt, *layam*, loss or death: a word which Mr. J. Prinsep read *dānam* a gift. Dr. Moore translates his own transliteration thus—"And his passing away was as a lamentation, and my beauty and my grace are as lamentation, O Judges!" If any one were disposed to forgive a nearly doubling the number of consonants, and an elision of eleven vowels, he must still feel that letters would not be cut on stone to carry down to posterity, a sentence so very inane.

In the rendering of the Girnar inscription, the phrase—"the mouth of ruin hath pleaded their cause"—occurs twenty-two times. If precisely the same letters recur so many times on the face of the rock itself, surely it must have been intended to convey some meaning of greater importance. When Job said, "Oh that my words were graven with an iron pen, and lead in the rock for ever"—he gave a sentence of great weight for the subject. Rock inscriptions can scarcely repeat, over and over again, mere inanities.

Dr. Moore has given the lengthy "inscription on Feroz's pillar in English letters." It cannot be here quoted; but referring any one, in the least degree competent, to the book itself, I ask—do you call *that* Hebrew? For example, look at line 8.—*Vidi samti gampta pitri su, su, su aja gulu su su su su aja viyam.* Again I ask, is *that* Hebrew?

Either Dr. Moore was imposed on by some one in his employ—as more than one gentleman, in this country has been imposed on by his Pundit or Moonshee—or else he has imposed on his readers a

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tissue of nonsense, from some motive, or end, best known to himself. However the dilemma may be cleared, it is a pity that so much labor and expense in printing a book have been next to thrown away —unless indeed the object were to make money, by deceiving the unwary, with a taking subject and flash title: a supposition that I would not hastily, and uncharitably make. There are I repeat many redeeming passages, and much that is either curious or useful; but that the Bauddhists in the east, or the Saxons in the west, were descendants from the *Beni Israel*, I think remains unproved; and, to the best of my judgment and belief, the *lat'h* or Bauddhist inscriptions aré not as yet correctly translated; whether by the late Mr. J. Prinsep, or Prof. Wilson, or by the present Dr. Moore.

I may perhaps venture to state my opinion, that the inscriptions in the *lat'h* character certainly are in an ancient Indian language. I ground this opinion mainly on my being able to make out words, and parts of sentences; though I have not been able, with perfect satisfaction, to read the entire of an inscription. Dr. Moore has copied a plate, with an inscription, from Col. Cunningham's book on the Bhilsa and Sanchya Topes. Col. C. states that it represents a woman of Thibet dancing before a Chief. The latter is seated with an expression of complacency on his countenance; two or three female members of his household are in the opposite corner. The lusty and rather awkward figure of the performer, grotesque in its expression, is in the foreground, and two men in the left corner, seated on the ground, are beating small kettle drums. The inscription over head is plain, and apparently complete. I am not quite sure of two letters; but I believe the reading to be—

> *Vilósa ka holangi kári dhora pákam makagi.*
> Pastime of the performer female, the chief beholding rejoices, i. e. The chief looking on the dancing woman is pleased.

This sense corresponds so exactly with the scripture, that I am induced to think it correct. If so, the language has a resemblance to the general substratum of southern languages; and the first word is a *prácrit* of the Sanscrit *vilásam* sport or pastime. This one inscription, if any view of it be solid, would at once remove any idea of Hebrew being the language of any of the said inscriptions. Dr. M. transliterates it in his usual fashion.

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The Hebrew is by no means a language commonly known in England. How a medical man came to have time and inclination to acquire it, has caused me a doubt. Dr. M. must have made some degree of acquaintance with it; but looking at the version of the engraving on Feroz's pillar I cannot help thinking that he reckoned on the ignorance of the greater portion of his readers; and was disposed to risk consequences as to the small remainder.

The Greek is more within the line of a physician. Medical men in their technicalities, affect the Greek even to barbarism. In this language also Dr. Moore has failed, for the Greek legends on Bactrian coins are not dealt with fairly; but *twisted* in a singular manner: the more surprising, as more certain of detection, and exposure than Hebrew transliterations. I do not enlarge on this point, because I have seen some remarks by the Editor of the Madras Journal &c. on one of the legends; and I trust that gentleman (in a note or addendum) will state his own views on the subject. His estimate of the book, I believe, is very similar to my own.

Were the Literary Journal a Review it would not be unsuitable to take out a few poetical or descriptive passages, wherein Dr. Moore appears to the greatest advantage; but the ethnological and archœological are properly the only portions suitable to a secular and scientific Journal. Considering that the Bauddhists and Brahmans were originally one people, Dr. Moore perhaps has not wholly missed his mark; since it is my opinion—for which I have elsewhere* given some reasons, and have more in reserve—that the Brahmans are descendants of the Beni-Israel, or ten tribes of the great captivity under Shalmaneser king of Assyria. I agree with Dr. Moore in his estimate of a book an the lost ten tribes by Dr. Asahel Grant, an American: Dr. Grant was however probably right as to the location of the first small captivity under Tiglath Pileser of Assyria.—It is an interesting subject; and if public attention can be turned in that direction, it is one which may issue in unlooked for discoveries.

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* Vide—Introduction to Vol. 2 of a Catalogue Raisonné of Government M. S. S. Articles, SAIVA, VAISHNAVA and THEOLOGICAL.

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NOTE BY THE EDITOR.

An Editor, especially of a Literary and Scientific Journal, is generally credited, either in his own person or as the reputed leader of a formidable band of *literati*, with the possession or command of vast and varied stores of erudition. He must always speak *ex cathedrâ*; his censure or praise must be dealt round without any misgiving or hesitation; and he must never admit an error, or confess to the smallest incapacity. But in Madras where the impersonality of an Editor is by no means complete, and where the limited extent of his resources is tolerably well known, it would be absurd to assume the air of a final judge and authority, or to screen pretensious sciolism behind the regal "we."

Being neither a Sanscrit nor a Hebrew scholar, and my knowledge of Greek being more a matter of distant recollection than of present proficiency, I should therefore under ordinary circumstances have been very reluctant to pass summary judgment on a book such as that now under review, which has evidently been the result of great labour and thought, however perverted, and the subject of which is far removed from the ordinary sphere of my studies and avocations. But in the present instance the author's offences are so flagrant, his pretensions to occult learning and original research so provokingly obtrusive, that I cannot decline the tempting invitation of the Rev. Mr. Taylor that I should add a few words to his interesting paper, assist in the exposure of Dr. Moore's distorted paragrams, and show how plain a tale can put him down.

In pursuance of his determined purpose of finding the Lost Tribes of Israel among the Bauddhists of North India, and of identifying them with the Saxons of the West, Dr. Moore introduces two gold coins of the Greek Bactrian King, Kanerkes, supposed to have reigned about A. D. 100. These coins are represented in fig. 2 and 3 of the plate at p. 293 of the book. Both of them present on the obverse the image of the King; on the reverse of No. 2 is the well-known figure of the Goddess Diana, with the crescent moon on her head, and the word NANAIA; on the reverse of No. 3 is the equally well-known figure of Apollo, his head encircled by the solar

halo or glory, and superscribed with the word 'HΛIOS (Helios), which every school boy knows is Greek for the Sun, and is one of the ordinary titles and characters under which Phœbus Apollo makes his appearance in Grecian mythology.

It will hardly be believed that Dr. Moore offers the following explanation of the legends on these coins :—"The coins of this king of kings, perhaps *Leo Kanerkes*, bear two remarkable words, in the one case being *Nanajah;* and in the other *Elias.* These words stand at the back of figures of *Godama;* that the figures are those of Godama we learn from the monogram containing his name, as shown in a former chapter. The words referred to are in Greek letters, but as Greek they have no meaning; as Hebrew, however, they are full of significance when applied to Godama : for *Nanajah* signifies the *offspring of God;* and *Elias* is the Greek rendering for the Hebrew word *Elijah*, as we find in the New Testament, and in the version of the Seventy, well-known to the inquiring Greeks, and probably to those numerous Greek colonists over whom *Godama*, at least through Kanerkes and Kadphises, reigned."

The most remarkable point perhaps in this tissue of absurdities is the audacious statement that the word *Helios*,—tortured by Dr. Moore, by changing *o* into *a*, and omitting the aspirate, into *Elias*, —has "no meaning in Greek," when it is in fact the ordinary word for the sun. Then it is worthy of notice that he converts the Greek *Nanaia* into *Nanajah*,—a form which is not reconcileable with any modern or reasonable system for rendering Oriental words into English letters, but which, from its harmony with the barbarous etymology adopted in James the 2nd's reign by the compilers of the authorised Version of the Bible, is calculated to give his "transliterations" an air of Scriptural Hebraism, and thus to make a favourable impression on the unlearned public.

As these coins by no means make their first public appearance in Dr. Moore's book, he seems to think it necessary to make some allusion to the previous and accepted descriptions given of them by competent scholars, but he does so with flagrant unfairness and concealment of the truth. Thus he says at p. 295 :—" In remarking

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on coins having Nanajah or Nanaia on them, Professor Wilson, in his "*Antiqua Ariana,*" traces the use of the term in a religious sense to Armenia, but he does not give us its meaning."

I have turned to the Antiqua Ariana, and will now prove by extracts from its pages what Professor Wilson really does say. At p. 14 speaking generally of the coins of the Kanerkes type he observes :—"The legends on these coins, written in a barbarised form of Greek, were completely decyphered by Mr. Prinsep; on the reverse occurred Greek or Hellenised native names of the Sun and Moon, as Helios, Mithro, Mao, &c., and frequently the term Nanaia." I need scarcely point out that Prinsep and Wilson did not fail to recognise the familiar effigies of the Sun and Moon, and that they did not consider the word Helios to "have no meaning in Greek."

At p. 359 of the Antiqua Ariana Professor Wilson says :— "Upon the reverse of some of the coins we find the legend Helios, HΛIOS. It must be granted that the terms Helios and Mithro indicate the relinquishment of all conformity to the Indian system of belief which prevailed under Kadphises, as shown by the types on his coins. The device accompanying this legend is that of a male figure, with the fillet of royalty on the head, which is also surrounded by a nimbus with rays. It is, no doubt, intended for a personification of the Sun."

And at p. 362 : —"Another term, and one of which the Persic origin can scarcely be disputed, Nanaia, occurs upon very many coins, both large and small. The title accompanies a female figure, in which we must have either, the goddess Anaitis or Anahid of the Persians, or her priestess,—the Artemis, (Diana) whose worship Artaxerxes Memnon, according to Berosus, endeavoured to spread throughout Persia, and especially in Bactria, and whom Mr. Avdall has successfully identified as Anaia or Nancea the tutelary goddess of Armenia. We find her also mentioned as Nancea in the Apocrypha, as the goddess of Elymais, in whose temple Antiochus was slain. (Maccabees, B. II, chap. I v. 13.)"

Dr. Moore does not hesitate to write that Wilson "traces the use of the term in a religious sense to *Armenia,* but *does not give us its*

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meaning." Yet it will be seen that Wilson points out that Nanaia is a personification of the Moon, the Artemis or Diana of the Greeks; and that the goddess is referred to under that name in a book so accessible as the Apocryphal second book of Maccabees, as one of the deities worshipped by Antiochus, one of the progenitors or predecessors of the Greek Bactrian Kings. ·Professor Wilson adds :—"It is very likely that her worship extended along the south coast of the Caspian, and thus reached some of the Indo-Scythic tribes, by whom it was imported rather late into India. Of the migration of Nanaia thither there is every probability that the memory survives in the Bibi Nani, or Lady Nani, who is reverenced by the Mahomedans, and worshipped as a form of Parvati by the Hindus in various parts of Afghanistan"

The figure of *Nanaia* on the Bactrian coins is clearly and undoubtedly that of a female, yet Dr. Moore shuts his eyes to this fact, and pronounces it, as well as the very distinct and quite different male figure of *Helios*, to be the representation of Godama, the Buddhist incarnation.

But I think we have had enough of this foolish book. The Rev. Mr. Taylor thinks that Dr. Moore is right in some of his conjectures, and that he has "not wholly missed his mark." This is quite possible; out of a hundred random reckless shots one may have been successful. I remember enough of the Greek I learned at School to be able to quote the first example in the Syntax of the Eton Grammar :—

πολλάκι τόι κάι μῶρος ἀνηρ κατακάιριον ἔιπε,—a foolish man has frequently said an appropriate word,— or as we may translate it on the present occasion. "Perhaps even *Moore* may have hit upon a truth." I will not follow the bad example of our author, and profess my firm belief that the name *Moore* is derived from the Greek μώρος—in the vocative case μώρε—but I do most positively declare that such a derivation would be quite as reasonable and quite as probable as most of those contained in the Lost Tribes, or the Saxons of the East and West.

E. B.

PUBLIC DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Dated 16*th April* 1862, *No.* 464.

The Government have for some years maintained a Museum at Madras in which many valuable specimens have been deposited, but the collection illustrative of the Natural History of even this Presidency is still very defective. This has probably arisen, in the first place, from ignorance on the part of the public that any value is attached to specimens of Natural History, or that such contributions will deserve or receive a place in the Museum; and in the second place from want of instruction as to the objects to be collected and the mode of preserving them.

2. The accompanying short paper (adapted to India from one which was issued by the Government of New South Wales) contains clear and practical instructions as to the Mode of preserving specimens, and the Governor in Council resolves to publish and circulate it here, with the double intention of placing such information within the reach of the public and of, thereby, affording them the assurance that every thing which bears upon any of the many branches of Natural History from the minutest insect or shell, to the skin and skeleton of the largest mammal, is of value, and will be thankfully received and acknowledged by the Superintendent of the Museum, Captain Mitchell.

3. The advantages to be derived from the existence at the Head Quarters of the Presidency of a Museum containing not merely the productions of the Southern part of India but also those of other portions of the globe are manifest. In order however to obtain specimens from other countries the Superintendent of the Museum must be in position to give those of India in exchange and this he cannot do unless from the different Districts he is furnished with specimens illustrative of their Natural History.

4. The Governor in Council entertains the hope that the public will very generally co-operate with the Government in this desirable object and that they will the more readily do so when they learn

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from the "Hints" now published how easily very valuable assistance may be rendered by them.

(True Extract.)

T. PYCROFT,

Chief Secretary.

Hints on the Preservation of Specimens of Natural History, intended for country residents (adapted to India.) By John Macgillivray, f. r. g. s., *Author of "Voyage of H. M. S. Rattlesnake," &c.*

It is not necessary in the present age to address any arguments in favour of Natural History, as one of the sciences, for it has long been established as such, although certainly yielding in point of importance to many others. But I would say a few words with regard to the amusement, rational enjoyment, and intellectual improvement, which a taste for Natural History pursuits, so easily acquired, brings within the reach of those especially who are residents in the country. It need not at all interfere with the more serious duties of life; it agreeably fills up one's leisure hours. Every stroll in the garden, or in the jungle or forest, or by the sea-shore, presents the observer with objects of interest, whether of vegetable or animal life. Whenever a person takes an interest in contemplating, examining, and studying these things, and follows his bent of mind as far as his time and opportunities allow, he becomes a Naturalist—a student of nature—for such an appellation is by no means to be appropriated solely by those further advanced in the study, who have mastered technicalities and are acquainted with the various scientific arrangements, and possess some knowledge of the external and internal structure of the objects in question. And then what a wide field of research does the Natural History of India afford! Yet those who have done the most to make the world at large acquainted with its natural productions have seldom been permanent residents, but travellers explorers, and naturalists from other countries. Yet every resident in the country, provided he be a person of observation and of ordinary education, could furnish a fund of information regarding the objects around him which would be highly valued by all true naturalists, who are not content with the mere inspection of cases of

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stuffed birds, or drawers of insects of the history of which little is known. The periods of arrival and departure of migrating birds, and notes respecting their habits, the seasons at which certain insects make their appearance, their food, their metamorphoses, and a thousand other similar matters, are well worthy of being recorded; and if any one should note down, day by day, whatever he has observed bearing on these points, the increasing interest of the subject will induce him to continue his pleasing task. And should observations of this kind be made and recorded in various localities, a comparison of the results would doubtless evolve many important deductions bearing upon the Natural History of this great territory.

Many residents in the interior are deterred from attempting to preserve specimens of natural history, by entertaining an erroneous idea of the difficulties attending the various operations to ensure that end. But, with the exception of that part of Taxidermy (or the preparation of skins) which embraces the setting up in position of quadrupeds and birds, an operation requiring a considerable amount of practice, and affording scope for much taste in order to be successful in imitating the natural form and characteristic attitude of the creature to be stuffed, I can assure the young beginner that with an ordinary amount of ingenuity, neat handedness, and patience, he will meet with no great difficulties to be overcome. On the contrary, at every step he will find himself becoming more and more proficient, and take so much the greater interest in the pursuit. But, without entering further into this subject, I shall proceed to give a few practical remarks on the mode of preserving the various objects of natural history.

MAMMALIA.

(Including all animals which suckle their young).

The mouth and nostrils, having been stopped up with cotton-wool or tow, any shot holes having been plugged up, an incision is to be made with a sheep-knife in the central line along the breast and abdomen, of sufficient length to admit of the extraction of the body. The skin is then to be detached in the same manner as in, skinning a sheep, the legs are to be disjointed from the trunk, and

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the bones cleaned of flesh down to the toes; the tail may either be stripped from within, or the bones and flesh removed through and incision from without. The skin of the head should be detached as far as the lips. The body may then be removed by cutting through the neck. The skin should now be turned inside out and carefully cleaned of fat and flesh, the skull should be similarly cleaned, and the brain extracted, after enlarging the hole at the back of the head. The skin is now to be meared (by means of a brush) with arsenical soap rubbed up with water into a lather, and burnt alum in powder should then be dusted over it and rubbed in along with the soap. The bones of the legs should have tow, cotton, or wool wrapped round them to restore them to their previous dimensions; the cheeks and sockets of the eyes may be similarly treated, and the moist skin should be restored to its former condition, or with the hair outside. The skin should be filled out to nearly its natural dimensions with any suitable dry substance, and the opening in the lower surface stitched up. Incisions should be made in the palms of the hands and soles of the feet, if fleshy, and as much of the interior (excepting the bones) removed as can be got at. These incisions as well as the lips and margins of the orbits, should be brushed over with a feather or brush dipped in a solution of corrosive sublimate.* The object of distending the skin is to ensure its thorough drying, that of using the alum is partially to tan the skin, and prevent the hair from falling off. When dry the stitching may be removed, and the stuffing extracted, thus reducing the bulk of the specimen. It is perhaps almost needless to mention that a skin prepared in this manner can afterwards be relaxed and softened to prepare it for being "set up" with the aid of wires in any attitude selected.

* Take of white arsenic 1 lb.; of hard white soap 1 lb.; of carbonate of potass ¼ of a pound. Melt the soap in thin slices with a sufficiency of water, in which the carbonate of potass has been dissolved, over a gentle fire; when thoroughly mixed add the arsenic and stir well until the whole has been incorporated; pour it into earthenware vessels, and when cold it is ready for use with water and a brush. Spirits of the wine is the best solvent, but water will do, though not so well, as corrosive sublimate is very sparingly soluble in water, while the addition of camphor to the spirits of wine enables it to take up an additional quantity of the sublimate.

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BIRDS.

Of the many species of Indian birds, there is a very large proportion which, from their beauty, singularity of plumage or habits, or their rarity, we should wish to see represented by preserved specimens. The process of preserving the skins of birds is very simple—a scalpel or two, a pair of nail scissors, some cotton, wool, or tow, a pot of arsenical soap, a brush, needles and thread, are the only articles required to be provided, and even some of them may be dispensed with. When a bird is shot the mouth is to be stuffed with cotton wool, any blood removed by wiping or washing if necessary, and the shot holes, if bleeding or large, plugged with a piece of cotton twisted into a point and introduced with a pin. The bird should then be wrapped up in paper. When the body is cold the upper wing bones should be broken close to the body, when they do not interfere with future operations. Lay the bird on its back on a table, separate the feathers on each side of the central line, and make an incision from the top of the breast bone to near the vent. If plaster of Paris, or powdered chalk, or flour—but the last is the worst—be at hand, use it in dusting between the body and the skin as you proceed to separate the latter carefully, introducing pledgets of cotton, to prevent the feathers getting soiled. When the skin has been detached for a little way all round, using the finger for this purpose as much as possible in preference to the knife, cut through the leg at the thigh joint, then work down to the rump, and cut through at the base of the tail with one snip of the scissors, taking care to retain the tail bones in which the feathers are fixed. The skin of the rump should then be turned back and retained with the left hand, when the process of detaching the skin may be continued as far as the shoulders. The wings are then to be separated, where the bone had previously been broken, the neck stripped as far as the head, the skin drawn over the head as far as the ears (which are to be cut through at the base), the eyelids cleared from their attachments, the ears scooped out with the scissors, and the skin drawn down to the base of the bill.* The neck should then be cut through at its

* In the case of some birds with large heads and slender necks, as all the ducks, the black cockatoos, &c., where the skin of the neck cannot be drawn over the head, it is necessary to cut off the neck as

junction with the skull, and the tongue removed with it. Cut off from the back part of the skull a sufficiency to admit of scooping out the brain, and clean the skull of all superfluous flesh. Take the wings and strip the skin down to the end of the second joint, cut off the remainder of the shoulder bone, and clean the next two bones bare. Treat the legs similarly, only retaining all the bones left. Then clean the bones of the rump, taking care to remove the oil glands, and all fat and grease elsewhere on the skin, which by this time has been turned inside out. Then take your arsenical soap and anoint the rump bones and about the tail, lay a few small flakes of cotton on the wet skin, to prevent the feathers becoming soiled, anoint the legs and skin about them, wrapping a little cotton round the bones, returning the skin of them and of the rump to their natural positions. Tie with thread the wing bones together, keeping them a short distance apart, and returning each wing to its place after applying the soap. The skull should then be soaped over, as well as the neck, and a small pledget of cotton placed in each eye-socket; the skin may then be returned over the head and neck, which operation will materially be facilitated, by pulling upon a piece of thread previously passed through the nostrils, before commencing to skin the bird. The feathers may now be smoothed down, and the wings placed in their natural position, where they will be kept by a hard pledget of tow pressed down tightly upon the string connecting them—another pledget should be placed on each side of the breast, which further secures the wings. Then roll up some tow into the former size of the neck, and introduce it by means of a stick into the hole in the back of the skull, where it may be tightly fixed. The neck may now be shortened as much as is required, the remainder of the skin distended with stuffing materials, but not too fully, and the opening sewn up, beginning from above—a few stitches only are required. The bill should be tied, the legs crossed and tied, and after the feathers have been again smoothed down, the stuffed skin should be inserted into a cone of paper head first and there left until it is sufficiently dry, which will be the case in a few days.

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high up as possible and extract the remainder, and clean the head through an opening in the back of the neck, which can be afterwards sewn up.

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REPTILES.

The generality of reptiles, as snakes, lizards, frogs, &c., are best preserved in spirits. Large lizards, however, may be skinned and stuffed; sawdust or dry sand being the best material, for filling with, as it can be forced into all the recesses, by means of a stick and prevent shrivelling of the skin—when dry the stuffing can be shaken out if thought desirable. The various kinds of fresh water turtles of this country are easily preserved. The breast-plate should be more or less completely removed, by making an incision along the lines of junction with the sides and neck, and when the room is obtained for getting at the inside, all the interior can be removed, as well as the neck and soft parts of the head. After anointing with arsenical soap and filling up with any suitable materials, the breast-plate is to be replaced and fixed with pins, and the legs arranged in their natural position on a board until dry.

FISHES.

Small fishes, like small reptiles, are best preserved in spirits. However, the skins of fishes may easily be prepared in one or other of two ways. The first, and simpler, is to retain one half of the skin only, including the central fins, and removing all the soft parts. The skin having been cleaned by washing and allowed partially to dry, the arsenical soap should be applied to the inside, and wool, or cotton, or tow employed to distend the one-sided skin to its natural dimensions. It is then to be turned over on a board, when, with the aid of pins and bands of paper, the fins can be displayed in a natural position, and the correct outline of the fish retained. By the other process both sides of the skin are preserved. An incision is made with the scissors along the centre of one side, reaching from the top of the gill to the base of the tail fin. This will give plenty of room for extracting the whole of the interior, detaching the skin, snipping through the base of the fins from within, removing the brain, eyes, and soft parts of the head wherever they can be reached. After washing, and anointing with arsenical soap, filling up the hollows with cotton wool, the opening should be sewn up. The loose bag then presented by the skin should be filled

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with sand, poured in at the mouth, and with a stick the requisite degree of convexity can easily be given to one side. The other side, or that where the incision was made, should be laid flat on a board, and secured in its place with pins and strips of paper, and the fins displayed as taste may dictate. When thoroughly dry the sand may be shaken out. Fishes preserved in either of these ways make a fine show if displayed in glass cases on a white board. A coat of copal varnish applied *as soon as the skin is dry*, retains much of the colour which otherwise would fade, besides giving a fresh and life-like appearance to the specimen.

INSECTS, &c.

No branch of the wide subject of Entomology can be followed up by residents in the interior with greater facility and with more satisfaction than Entomology. Putting Botany aside for awhile, there is no kindred pursuit which, even to females, and perhaps to them especially, affords so many inducements to cultivate it as the study of insect life. I need only refer my reader to the nearest ant-hill, or a bee hive in the garden, or rear from the egg, through the successive stages of caterpillar, chrysalis and butterfly, any one of our native species. In these instances, much will be found not only to attract the attention but to induce the exercise of the higher powers of the mind; but my object here is merely to point out the simplest means of preserving specimens of insects. It would be idle to point out, the advantages of cork-lined, air-tight, and glazed insect cases, with the usual adjuncts of entomological pins; but I would here deal merely with the ordinary means at the disposal of almost every resident in the interior, showing how a collection of insects may be made. If the collection is intended for tarnsmission to some distant locality where the specimen can be finally prepared and arranged, nothing more is required with respect to most insects (except butterflies and moths) than to put them in a pickle jar two-thirds filled with any spirit of moderate strength, which when filled, corked up, and properly secured from leakage and evaporation, may be transmitted to any part of the world. After this the individual specimens can be pinned, set (a term accorded to the disposal of the legs, wings, &c., antennæ or horns), in the manner considered most suitable

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for the displaying of these parts. Butterflies for transmission to a distance may simply be reduced to a small compass by pressure between the forefinger and thumb, bringing the upper surface of the wings of each side in contact with those of the other, and doubling back the antennæ between them. The butterflies may then be enclosed in a piece of paper folded up in a triangular form. Afterwards the recipient, by steaming it, or by placing it for some hours over damp sand, can render the body sufficiently lax to enable him to set it. With moths, however, as many have large soft bodies, it is necessary with a pointed pair of scissors to make an opening along the lower part of the abdomen, extract the intestines, pour in a few drops of the solution of corrosive sublimate, and introduce a little cotton wool to prevent the sides from coming in contact. They may then be treated as butterflies. But if the object be to make a collection of insects to be kept for personal gratification, the first step should be to have prepared a wooden case of any convenient size, about 2½ inches deep, with a close fitting lid. A very good insect case can be made of millboard. If prepared cork cannot be had, bottle corks may be cut into slices about three-eights of an inch in thickness, and glued into the bottom of the box as close together as they can be placed. If there is any choice of pins they should be as long and as slender as can be obtained. Beetles, which may be procured in almost all situations, in ponds, under bark, stones, and logs, on flowers and leaves, in dung and carrion, &c., are best killed by being placed in a tin box with a lid, close to the fire, when they will shortly be stifled, care being taken that they are not burnt. This seemingly cruel process is by far the most humane known to me, in the absence of chloroform or prussic acid. Beetles may also be speedily killed by immersion for a few moments in boiling water, or by dipping a phial containing them in the same. A little experience will soon teach what process is best adapted for each particular kind of beetle; for example, none that are bright colored, or have a mealy or downy surface, should be dipped into hotwater. When dead a pin should be stuck through the right wing-cover, and after drying for a few days the beetle may be transferred to the insect box. Flies, bees, wasps, &c., may be treated in the same way. Butterflies are readily killed by a pinch on the breast, when they

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may be transfixed, stuck on cork, their wings expanded and kept in the required position with pins and slips of paper or card for a few days, when they can be placed in the insect box. Large bodied moths cannot be killed by a pinch; it is therefore unfortunately requisite to pin them alive and kill them by inserting a red hot needle into the abdomen. These large bodied moths require the contents of the abdomen to be removed, otherwise they will speedily decay. Grasshoppers, "mantises" and "animated straws," &c., require the contents of the abdomen to be removed, and replaced with cotton, after a few drops of the solution of corrosive sublimate have been applied to the inside. Centipedes, spiders, and scorpions, should be similarly treated, but they are best preserved in spirits. An insect net is indispensable to the collector. The simplest as well as the best is made of 3 feet 6 or 8 inches of brass wire, the thickness of a quill, with the two ends of the wire turned off at right angles to form a handle three or four inches long, and the remainder bent so as to make a ring a foot in diameter. Tie the ends tightly together. Make a bag of gauze or mosquito netting three feet deep, and attach it to the ring. The net should be fixed to a stick of any length convenient to handle. It is chiefly used in capturing butterflies and other winged insects during flight or upon flowers, but may be used in a variety of other ways. But the finest specimens of butterflies and moths are not those captured with the net, but those which are bred from the caterpillar and chrysalis. In the former case the caterpillar should be enclosed in a box with a gauze covering to admit air, and daily supplied with leaves of the kind on which it was found feeding, until it assumes the chrysalis state. I may conclude this subject by mentioning that many night-flying insects are attracted by a light, and may thus be brought within reach of the collector. Crabs of all kinds, except very small ones (which may be treated as insects), are best prepared by removing the shell from the back with the knife, cleaning out all the soft parts of the interior, extracting (by holes at the joints) with a wire the contents of the great claws, soaking the whole for a couple of hours in fresh water, anointing the inside with arsenical soap, replacing the shell, and laying the specimen on a board to dry, with the legs pinned up as required. Care must be taken however that

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the specimen should not be dried *in the sun*, as that would affect the colours. Lobsters, crayfish, prawns, &c., should have the hinder part detached immediately behind the back shell. This gives ready access to the interior, which should be cleared out, when the soap brush should be applied, the inside stuffed with cotton, the two portions united with gum or glue or a pin or two, the ends of which can be snipped off. The legs can then be arranged on a board as with crabs.

RADIATE ANIMALS.

Star-fish and sea-eggs should first be immersed in fresh water for several hours, to extract the salt. The former, if of small size, may be dipped for a few minutes in boiling water and dried in the shade. Larger ones require to be opened with the knife along the lower surface of the arms, and the soft interior sucked and squeezed out. The solution of corrosive sublimate can be poured in so as to reach the whole of the interior; the specimen may then be dried. Sea-eggs should have the interior cleaned of their contents, by removing the mouth (which can afterwards be replaced) and washing out the inside, following this up by pouring in the solution of corrosive sublimate, and shaking it about so as to diffuse it. With respect to crabs, star-fish, sea-eggs, corallines, sea-weeds, and many other marine productions, I would wish the collector to be impressed with the fact that the principal object is thoroughly to get rid of the salt by a good soaking in fresh water. Unless this be effected the specimen is apt to become damp, mouldy, and will ultimately fall to pieces, as sea salt is highly deliquescent, and in damp weather attracts moisture from the atmosphere.

SHELLS, &c.

The land shells of India are more numerous in point of species, and exhibit more singularity in form, variety in markings, and beauty of colour, than is generally supposed; and although most of them come under the designation of *snails*, they are objects of great interest to the collector, whether scientific or otherwise. They are to be found under bark, logs, and stones, as well as on the trunks and leaves of trees, under dead leaves, and in tufts of

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fern. To prepare the shell, the best way is to place the snails in a vessel of any kind and sprinkle them over with a little water. When the animals protrude, *boiling* water suddenly dashed upon them immediately kills them, when they may readily be extracted with a pin. The spiral shells found in fresh water may be similarly treated. The bivalve shell inhabiting the same localities, as the fresh water mussels, will immediately open on the application of boiling water, when the animal should be removed, and the sides of the shell brought together with them. While drying they should not be exposed to the sun, as, in their case and that of all other shells covered with an epidermis, or thin outer coat—that substance will crack and shrivel up. All kinds of marine bivalve shells should be treated as the fresh water mussel previously referred to. Many spiral shells, like periwinkles may be boiled, the water and shells being placed on the fire when cold, and the animal extracted with a pin. But whenever the shell is large, or thick, or has a glossy enamelled surface, the action of boiling water would be highly injurious. The best mode of procedure therefore is to pack them away among sand until putrefaction has sufficiently advanced to enable one to pick out part of the animal, and shake and wash out the remainder, in which latter process a syringe will be found useful. One genus of shells, requires special treatment; I allude to the Chitons, many jointed shells which adhere to the rocks like the limpet. They should be soaked for several hours in fresh water, the animal is to be scooped out with a knife, and the shell extended on a slip of wood, and secured there with thread or string, for a day or two, or until thoroughly dry. It is almost unnecesary to give instructions as to the localities to be searched for marine shells: but I would strongly urge upon every one interested in making a conchological collection, to procure a light dredge as the means of obtaining not only the deep water shells, but crustacea, star-fish, sea urchins, corallines, sea-weeds, &c.

PLANTS.

The preservation of specimens of plants, by drying them between sheets of paper, is a very simple process in the abstract, but affords much scope for the display of taste, and many plants re-

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quire great care in drying almost any kind of paper will do, and although the more bibulous or absorbent (like blotting paper) the better, yet old newspapers will answer sufficiently well. In the absence of of a botanical box to which to transfer the specimens when collected, they should be carried home as soon as possible, to prevent withering of the flowers. Each specimen may be about a foot or so in maximum length. Provide some boards the size of the paper, lay three or four sheets on one and spread out as many specimens as it will take without crowding upon them, lay a few more sheets of paper, then some plants, and so proceed until all are disposed of. A board should be placed between every dozen or so layers of plants, and another on the top—a weight of stones, or any heavy materials, should then be placed on all. Next day the plants should all be shifted and placed in dry paper, but otherwise treated as before, and this changing should be continued every day, or every other day latterly, until the specimens are quite dry; they may then, according to the pleasure of the collect or, be displayed on half sheets of white paper of uniform size, to which they may be fixed with gummed slips of paper. The locality and date should be appended not only in this case, but in that of all other objects of natural history. Practice will soon teach one the best mode of training and distributing the specimens so as to obtain an equal pressure, which in case of woody twigs, for example, can be done by paring away one side of the stem. A bookful of pretty jungle or wild flowers, neatly done up, would prove no mean rival in point of attraction to a lady's album upon a drawing-room table. Ferns especially look remarkably well upon paper, and no class of plants are more easily dried. Of sea-weeds, some of the smaller and more delicate kinds form objects of great interest when displayed upon white paper, and we have seen many beautiful collections of them formed by ladies residing on the coast—while the large kinds of sea-weeds may be dried between sheets of paper like plants, care having previously been taken to wash them well and soak them besides for several hours in fresh water; the more delicate kinds require a different treatment. After well washing a specimen of one of the delicate kinds in fresh water, place it in a dish of clean water

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upon a half sheet of white paper of the requisite size. Arrange the floating plant according to taste, and then gently withdraw the paper by one edge with the plant upon it. The sea-weed adheres to the paper with the branches and leaves displayed as under water, and the moisture is to be got rid of by pressure between sheets of blotting paper frequently changed until the whole is dry, which will be in a day or two.

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PROCEEDINGS.

At a Meeting of the Managing Committee of the MADRAS LITERARY SOCIETY *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 11*th April* 1861, *at half past* 6 *o'clock P. M.*

PRESENT.

The Hon. E. Maltby, *Chairman.*
Major Genl. McCleverty.
R. P. Harrison, Esq.
Major W. J. Wilson.
R. S. Ellis, Esq. C. B.
J. Talboys Wheeler, Esq.
J. D. Mayne, Esq.
Capt. T. Evans Bell, *Honorary Secretary.*

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 11th April 1861.

Here enter Statement.

Resolved that the above Statement is satisfactory and be passed.

Read Letter from the Royal Society of Edinburgh, acknowledging the receipt of Volume V, new series, of the journal.

Ordered to be recorded.

Read Letter from the New Orleans Academy of Sciences, acknowledging the receipt of Volumes from I to V. new series of the Journal. Ordered to be recorded.

Read Letter from H. A. Brett, Esq., to J. D. Sim, Esq., forwarding a Statement showing the places where the Earthquake was felt on the 4th March 1861, in the District of Salem.

Ordered to be transferred to the Sub Committee of Papers for publication in the forthcoming Number of the Journal.

E. MALTBY, *Chairman.*

T. EVANS BELL, *Honorary Secretary.*

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At a Meeting of the Managing Committee of the Madras Literary Society *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 9*th May* 1861, *at half past* 6 *o'clock P. M.*

Present.

The Hon. E. Maltby, *Chairman.*	J. T. Wheeler, Esq.
The Hon. W. A. Morehead.	Capt. T. Evans Bell, *Honorary Secretary.*
Major W. J. Wilson.	

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 9th May 1861.

Here enter Statement.

Resolved that the above Statement is satisfactory and be passed.

Read Proceedings of Government and Order thereon dated 26th April 1861, No, 599, with reference to the despatch from England of a Tin Case containing certain Manuscripts of the late Lieutenant Frye in the Khond language.

Ordered to be recorded.

Read Letter from Messrs. Saunders and Ottley, offering to supply Books, &c., to the Society.

Ordered to be recorded.

Read Letter from Messrs. Allen and Co., acknowledging the receipt of £ 150-0-0 and forwarding Invoice of Books, &c.

Ordered to be recorded.

E. Maltby, *Chairman.* T. Evans Bell, *Honorary Secretary.*

At a Meeting of the Managing Committee of the Madras Literary Society *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 11*th July* 1861, *at half past* 6 *o'clock P. M.*

Present.

The Hon. E. Maltby, *Chairman.*	R. P. Harrison, Esq.
Major W. J. Wilson.	Capt. T. Evans Bell, *Honorary Secretary.*
J. T. Wheeler, Esq.	

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The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 11th July 1

Here enter Statement.

Resolved that the above Statement is satisfactory and be passed.

Read Letter from Mr. J. A. Barth of Leipsic acknowledging receipt of £ 133-13-0 for Ethnographical Casts, and recommending the purchase of a series of Ethnographical Crania and Skeletons, and Photographic Edition of Messrs. de Schlagintweit's Panoramas of India and High Asia.

Ordered to be recorded.

Read the Letter from the Messrs. de Schlagintweit requesting to be supplied with the Society's Journal, and referring to an Extract from their Publications, stated to have been sent, but which has not yet been received.

Resolved that a set of the Journal from the commencement of the New Series, and a copy of every future issue be forwarded to Messrs. de Schlagintweit.

E. Maltby,
Chairman.

T. Evans Bell,
Honorary Secretary.

At a Meeting of the Managing Committee of the Madras Literary Society *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 8*th August* 1861, *at half past* 6 *o' Clock P. M.*

Present.

The Hon. E. Maltby, *Chairman.*
General W. A. McCleverty.
Major W. J. Wilson.
J. T. Wheeler, Esq.

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 8th August 1861.

Here enter Statement.

Resolved that the above Statement is satisfactory and be passed.

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At a Meeting of the Managing Committee of the MADRAS LITERARY SOCIETY *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 12*th September* 1861, *at half past* 6 *o'clock P. M.*

PRESENT.

J. T. Wheeler, Esq.	Captain T. Evans Bell, *Honorary Secretary.*
R. P. Harrison, Esq.	

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 12th Instant.

(Here enter Statement)

Resolved that the above Statement is satisfactory, and be passed.

Read letter from Lieutenant Mitchell communicating a Prospectus of a celebrated Picture on the point of publication in England, containing 50 Portraits of Eminent Men of Science living in 1807-8.

The Committee are of opinion that an Engraving such as that described in the Prospectus is not required for the purposes of the Madras Literary Society, but that the Prospectus may lie on the Table for the information of Members.

Read Proceedings of the Madras Government, dated 10th August 1861, No. 1525, reporting an Earthquake in the Village of Nandigamah on the 24th July 1861.

Referred to the Committee of Papers for publication in the Journal.

Read letter from Captain Raverty relative to his Push to Publications supplied to the Society.

Resolved that a Copy of Captain Raverty's forthcoming translation of the Pushto Poem, Goolshan-i-Roh be ordered.

Read letter from Dr. Shaw complaining of the selection of books, and pointing out some which he recommends.

Dr. Shaw's suggestions will be attended to.

Read letter from Mr. Hammond of the Foreign Office, forwarding a packet of Pamphlets transmitted by the Government of Prussia for presentation to the Society.

Ordered to be recorded.

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Read Proceedings of the Anniversary Meeting of the Royal Society of Antiquarians of the North, held at Copenhagen on the 27th May 1861.

Ordered to be recorded.

Read Draft of a letter proposed to be sent to Messrs. Allen and Co.

The Draft letter is approved and ordered to be despatched.

T. EVANS BELL,
Honorary Secretary.

At a Meeting of the Managing Committee of the MADRAS LITERARY SOCIETY *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 10*th October* 1861, *at half past* 6 *o'clock P. M.*

PRESENT.

General A. W. McCleverty.
J. D. Mayne, Esq.
Major W. J. Wilson.
Captain C. H. Roberts.
Capt. T. Evans Bell, *Honorary Secretary.*

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 10th October 1861.

Here enter Statement.

Resolved that the above Statement is satisfactory and be passed.

Read letter from the Secretary to the Literary Society of Manchester, acknowledging receipt of Numbers 9 and 10 new series of the Journal, and requesting the preceding Numbers.

Resolved that the Numbers of the new series of the Journal previous to No. 9 be forwarded to the Literary Society of Manchester.

Read letter from the Librarian of the Royal Physical and Economic Society of Konigsberg, forwarding two Parts of the "Schriften der Koniglche physikalische oeconomischen Gesellschaft," and requesting an interchange of Publications.

Resolved that the thanks of the Society be offered to the Royal Physical and Economic Society of Konigsberg, that their offer of exchanging publications be accepted, and that a complete set of the new series of the Journal be forwarded at the first opportunity.

T. EVANS BELL,
Honorary Secretary.

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At a Meeting of the Managing Committee of the MADRAS LITERARY SOCIETY *and Auxiliary of the Royal Asiatic Society held at the Club house on Thursday the* 12*th December* 1861 *at half past* 6 *o'clock P. M.*

PRESENT.

Major W. J. Wilson. | Capt. T, Evans Bell, *Honorary Secretary.*

The Secretary laid before the Meeting the usual Monthly Statement of the Society's Funds prepared up to 12th December 1861.

(Here enter Statement.)

Resolved that the above Statement is satisfactory and be passed.

Read letter form the Secretary to the Linnean Society acknowledging the receipt of Nos. 8, 9 and 10 of the Journal.

Ordered to be recorded.

Read letter from C. Oldham, Esq., forwarding Part 1, Vol. 1 of the Palæontologia Indica.

Ordered to be acknowledged with thanks.

Read letter from Messrs. H. and R. de Schlagintweit acknowledging the receipt of Nos. from 1 to 10, new series of the Journal

Ordered to be recorded.

T. EVANS BELL,
Honorary Secretary.

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Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

January 1861.

Date.	Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Thermometers. Means. Wet	Max.	Min.	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches	
1	30·067	75·1	68·7	79·7	69·1	E N E		Light clouds
2	·054	74·9	68·6	80·7	69 1	E N E		Cloudy.
3	·040	75·8	67·9	80·7	67·7	E N E		Hazy.
4	·021	74·5	67·4	79·5	66·5	E N E		Do.
5	29·985	74·3	68·3	79·9	66·4	E N E		Do.
6	·974	75·1	69·6	80·4	67·0	E N E		Light haze.
7	·964	74·7	69·6	79·9	67·1	E N E		Fine.
8	·944	74 9	70·2	81·4	68·0	N E		Do.
9	·974	75·5	71·2	82·6	68·9	E		Do.
10	·984	75·0	70·7	81·6	68·0	E N E		Do.
11	.982	76·4	71 9	82·3	70·6	E		Light clouds.
12	·989	77·3	72·3	81·4	73·0	E		Do.
13	·987	76·8	71·5	81·8	70·8	E N E		Nearly fine.
14	·985	78·0	72 3	82·8	75·1	E N E		Light haze.
15	30·013	78·0	72 1	82·5	75·2	E N E		Frequent clouds
16	·005	77·1	71·8	83·4	71·6	E N E		Light clouds.
17	29·952	75 9	71 0	82·7	69·2	E N E		Fine.
18	·958	75·4	71·1	81·7	68 4	E		Do.
19	·982	74 9	70·6	82·1	68·2	E S E		Do.
20	·991	76·1	71·5	82·2	67·6	E S E		Do.
21	·958	78·0	73·5	84·3	71·0	E S E		Do.
22	·904	78·8	74·5	84·4	72·2	S S E		Do.
23	·918	78 8	74·1	84·7	73 0	S		Do.
24	·949	77·9	73·1	83·5	71·4	S S E		Do.
25	·969	78·1	72·6	83 6	71·7	E		Do.
26	·957	78·1	72·8	83·1	72·3	N E		Do.
27	·938	78·7	72·9	84·6	75 8	E N E		Flying clouds.
28	·922	76·5	71·5	83·3	70·0	E N E		Light clouds.
29	·886	76·8	70·9	85·0	68·4	N N E		Light haze,
30	·895	76·8	70·4	83·7	68·1	S E		Fine.
31	·936	76 9	70·3	83·7	68·8	E S E		Hazy.
Mean.	29·970	76·5	71·1	82·4	70·0	E	None.	

February 1861.

Date.	Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Thermometers. Means. Wet	Max.	Min.	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches	
1	29·955	77·0	70·4	83·4	69·2	E S E		Nearly fine.
2	·947	76·3	68·3	82·0	67·8	N E		Fine.
3	·914	75·4	69·7	81·3	66·1	N E		Do.
4	·898	74·7	69·1	83·5	65·9	W S W		Do.
5	·865	74·2	68·8	83·9	65·4	S		Do·
6	·869	74 8	69·5	84·8	65·6	S		Do.
7	·919	75·5	70·0	86·7	66·2	S		De.
8	·952	75·8	71·2	85·8	67·3	S S E		Light haze.
9	·952	74 8	70·4	84·0	67·5	E N E		Cloudy till night
10	·939	76·5	70·8	84 0	66·3	Variable		Fine.
11	·919	74·6	68·4	84·4	65·9	S S W		Light haze.
12	·960	74 0	67·6	82·9	65·0	S		Fine.
13	·967	73·8	67·9	81·9	65·1	S		Do.
14	·962	75·4	68·0	82·7	68·3	E		Do.
15	·936	73·2	67·4	81·8	64·3	E N E		Do.
16	·931	72·9	67·6	82·7	63·1	E N E		Do.
17	·952	76·0	72·0	84·8	63·2	S S E		Do.
18	30·000	76·0	72·3	83·3	67·0	S E		Do.
19	·041	77·4	73·8	82·6	68·9	E		Light haze.
20	·011	78·6	74·7	83·9	70·1	E		Fine.
21	·005	79·8	75·9	85·0	74·2	E N E		Flying clouds.
22	·006	79·4	75·5	84·5	73·4	E		Light clouds,
23	29·995	77·9	73·5	83·5	70·7	E N E		Do.
24	·971	77·5	73·6	83·2	68·8	N E		Do.
25	·949	75·7	70·4	83·9	67·5	E		Do.
26	·945	75·9	71·3	85·6	67 0	E N E		Do.
27	·955	78·1	72·5	86·3	69·4	E N E		Cloudy.
28	·962	78·9	74·6	86·6	70·9	E N E		Fine.
Mean.	29·953	76 1	70·9	83·9	67·5	E S E	None.	

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Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

Date.	March 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Means. Wet	Max.	Min.	Wind.	Rain.	Weather.	April 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Means. Wet	Max.	Min.	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches.		Inches	°	°	°	°		In.	
1	29·697	80·3	76·1	87·5	72·5	S S E		Fine.	29·868	81·6	76·7	89.0	70·6	S		Fine.
2	·984	80·3	75·1	87·4	72·2	S		Do.	·876	81·6	75·3	88·8	71·3	S		Do.
3	·915	78·7	72·9	86·4	69·5	S		Do.	·863	82·5	76·6	89·1	69·6	S S E		Do.
4	·897	77·3	71·3	84·8	67·7	S		Do.	·810	85·0	78·9	90·7	73·9	S		Light clouds.
5	·902	78·4	72·8	85·6	69·0	S		Do.	·792	84·8	78·5	91·2	75·5	S S E		Hazy.
6	·891	80·1	74·6	87·2	71·7	S		Hazy.	·777	85·8	78·7	92·3	74·6	S		Do.
7	·889	79·9	73·8	87·5	71·7	S		Nearly fine.	·775	85·3	78·4	91·6	74·2	S S E		Cloudy.
8	·904	80·0	74·0	86·7	72·0	S S E		Fine.	·783	85·4	78·7	91·4	74·5	S E		Do.
9	·915	80·2	74·4	87·9	71·0	S		Do.	·784	84·1	79·1	92·3	76.6	E S E		Hazy clouds.
10	·896	82·0	76·7	89·1	74·7	S S E		Do.	·791	86·0	79·5	92·3	75·5	S E		Cloudy.
11	·916	82·2	76·9	89·6	75·4	S S E		Light haze.	·781	85·8	79·8	91·4	77·0	S S E		Changeable.
12	·958	81·9	77·0	85·8	78·8	E		Cloudy.	·752	85·7	78·5	92·2	75·6	S S W		Flyingclouds
13	·964	77·9	73·3	83·8	74·3	N E	·155	Overcast.	·759	86·6	79·8	94·1	77·0	S S W		Hazy.
14	·912	79·1	74·2	86·5	71·3	E N E		Light clouds.	·721	86·6	80·0	92·3	77·0	S S W		Light clouds
15	·869	79·3	74·3	87·8	71·4	S E		Do.	·768	86·7	80·3	92·5	77·9	S S W		Fine.
16	·867	80·3	75·3	87·9	73·4	S S E		Nearly fine.	·799	86·3	80·1	93·5	77·4	S S W		Nearly fine.
17	·897	82·2	77·3	89·7	74·3	S E		Light clouds.	·788	86·4	80·0	92·3	77·4	S S W		Fine.
18	·820	84·0	78·0	89·7	75·9	S E		Cloudy.	·799	86·2	79·4	92·7	75·6	S		Do.
19	·861	82·6	77·5	90·4	76·7	S	·016	Overcast.	·827	86·7	79·0	92·1	75·9	S		Do.
20	·854	80·8	77·7	86·6	75·1	S	·730	Do.	·836	86·2	78·9	92·3	75·9	S		Do.
21	·873	81·0	77·0	87·9	73·1	S	·130	Cloudy.	·799	86·7	79·6	93·2	75·4	S		Do.
22	·842	82·7	77·5	94·2	73·6	S W		Light clouds.	·754	88·3	81·5	95·2	78·5	S W		Hazy.
23	·832	84·1	79·1	92·5	75·5	S W		Do. Overcast night	·720	88·5	81·0	95·9	78·9	S W		Fine.
24	·843	85·2	80·2	91·9	75·5	S S W		Light clouds.	·745	86·2	80·9	93·0	78·5	S S W		Do.
25	·868	85·1	78·2	91·7	77·0	S S W		Hazy.	·823	86·5	79·9	93·5	78·6	S		Hazy.
26	·904	84·2	77·5	89.8	74·6	S		Do.	·834	86·9	79·5	93·3	76·5	S S E		Fine.
27	·898	83·7	77·4	89·5	74·2	S E		Fine.	·805	87·8	79·4	94·1	76·2	S S E		Do.
28	·898	82·5	77·1	89·4	73·4	S		Clear.	·719	89·4	81·0	99·7	77·6	S S W		Do.
29	·923	81·5	75·1	88·2	71·8	S		Do.	·693	90·1	79·5	100·9	77·8	W		Do.
30	·927	80·5	75·2	87.8	71·0	S		Hazy clouds.	·725	90·0	79·8	100·8	79·3	S W		Do.
31	·878	82·2	75·9	89·0	70·8	S		Fine.								
Means	29·896	81·3	75·9	88·4	73·2	S S E	1·031		29·786	86·2	79·3	93·1	76·0	S		

Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

Date.	May 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Wet	Max.	Min	Wind.	Rain.	Weather.	June 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Wet	Max.	Min	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches		Inches	°	°	°	°		Inches	
1	29·783	88·5	81·0	95·2	79·4	S W	.	Nearly fine.	29·628	87·8	77·8	97·9	82·4	W S W		Overcast.
2	·791	85·3	80·7	93·4	78·7	S S W		Light clouds.	·682	87·5	78·5	94·4	82·0	W		Do.
3	·749	88 3	81·0	96·0	78·2	S S W		Fine.	·696	91·1	78·9	100·7	81·8	W S W		Nearly overcast.
4	·694	89·7	80·8	100·1	79·4	S S W		Hazy.	·729	90·4	77·9	98·7	81·9	W N W	0·118	Cloudy.
5	·663	89·3	80·9	96·1	79·4	S W		Do.	·738	89·8	77·1	99·3	83·9	W		Overcast.
6	·718	90·9	81·1	101·8	79·2	S S W		Do.	·714	89·9	78·5	99·0	83·4	W N W	·018	Cloudy.
7	·695	90·2	81·2	99·7	79·4	S S W		Do.	·713	89·1	77·8	99·2	84·2	S W		Hazy.
8	·679	92·1	80·3	101·8	79·8	S W		Fine.	·729	89·7	78 4	98·3	83·4	W		Often overcast.
9	·681	91·3	79·4	102·1	79·8	Variable		Do.	·726	89.3	77·7	102·5	82·6	W N W		Light clouds.
10	·708	90·6	80·6	102·0	82·4	S W		Light haze.	·739	88·1	77·1	100·6	82·6	W S W		Heavy clouds.
11	·748	90.8	80·5	103·7	82·0	S W		Fine.	·738	88·3	78·7	99·2	81 4	W S W		Dull.
12	·657	91·0	79·2	107·5	82·9	S W		Do.	·744	88·8	80·0	101·4	81·6	W N W		Changeable.
13	·645	89·3	77·6	98·3	82·4	Variable		Cloudy.	·732	89·3	78 2	101·5	81·5	W		Hazy.
14	·662	85·6	80·1	97·8	....	S		Do.	·717	89·1	77·8	100·5	81·6	Variable		Nearly fine.
15	·675	89 5	78·8	97·1	....	S		Dull.	·663	88·3	77·0	99·6	81·7	W N W		Cloudy.
16	·710	88·9	81·2	95·7	82·4	S S W		Do.	·667	88·2	76·8	102·0	79.9	N W		Light clouds.
17	·717	86·3	80·1	94·2	82·2	S		Cloudy.	·690	88·6	78 7	99·9	82·9	N		Cloudy.
18	·686	87·7	80·5	93·8	81·6	S S W		Fine.	·725	88·4	78·1	100·1	82 3	W		Do.
19	·671	82 9	78·2	95·5	80·2	S S W	1·204	Cloudy.	·747	89·5	77·9	98·0	83·4	S W		Light clouds.
20	·626	87·7	78·1	98·9	78·7	W N W		Do.	·741	87·2	79 0	95·1	81·9	Variable		Nearly overcast.
21	·608	88·4	78·3	99·0	82·2	W N W		Light clouds.	·691	89·7	80·2	100·2	[illegible]	N W		Light clouds.
22	·599	89·9	77·6	99·2	84·4	E N E		Cloudy.	·694	88·5	80·2	96·3	82·4	Variable		Cloudy.
23	·594	90·1	77·2	102·7	84·4	N N E		Light clouds.	·726	84·7	77·5	93·3	82·4	Variable		Often overcast.
24	·599	89·1	78·4	98·4	85·1	N		Heavy clouds.	·741	87·6	78·1	94·2	79·7	S W		Cloudy.
25	·622	90·0	79·2	98·9	82·9	N W		Nearly overcast.	·737	85·6	77·8	96·3	78·4	W S W	·206	Do.
26	·631	90·2	79·6	97·4	82·9	Variable		Changeable.	·703	84·8	76·7	96·0	78·2	W N W	·297	Overcast.
27	·647	90·5	80 9	99 0	84·9	N W		Hazy clouds.	·668	82·6	75·2	89·2	76 6	W		Do.
28	·664	87·6	81·9	93·9	83·9	N W		Hazy.	·694	86·3	77·4	93·0	78·4	W	·008	Do.
29	·665	82·7	78·5	89·2	81·6	N W	·082	Overcast.	·730	86·0	76·6	94·0	78·6	W		Do.
30	·637	86·3	78·5	93·0	79·2	N N E		Nearly overcast.	·708	87·5	76·8	95·3	80·6	W		Do.
31	·638	86·7	78·6	97·7	79·4	W S W		Flying clouds.								
Means	29·673	88·6	79·7	98·0	81 3	W S W	1·286		29·711	88·1	77·9	97·9	81·4	W	0·647	

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Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

Date.	July 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry	Wet	Max.	Min	Wind.	Rain.	Weather.	August 1861. Barometer reduced to 32° Faht.	Thermometer. Means. Dry	Wet	Max.	Min	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches		Inches	°	°	°	°		Inches	
1	29·723	90·1	75·2	96·3	82·9	W		Overcast.	29·722	86·2	78·4	92·5	77·6	N N W	·422	Cloudy.
2	·733	89·6	76·4	99·2	84·3	W		Cloudy.	·766	82·0	77·8	90·4	75·6	W S W	·352	Overcast.
3	·715	88·5	77·7	101·1	82·4	W S W		Do.	·741	80·5	77·4	86·5	75·2	W N W	......	Chiefly overcast.
4	·717	89·0	79·1	98·2	82·4	S W	·072	Changeable.	·743	83·9	79·2	92·8	76·4	W	......	Light clouds.
5	·733	89·4	80·7	99·8	81 7	W S W	·030	Do.	·746	85·0	79·0	93·2	77·2	W	......	Nearly fine.
6	·719	87·0	79·3	100·0	80·7	W S W	1·136	Heavy clouds.	·752	85·4	79·1	91·7	80·0	S	......	Light clouds.
7	·709	84·8	79·3	92·3	76·6	W N W	·856	Changeable.	·746	85·5	80·0	90·3	79 6	W S W	·095	Nearly fine.
8	·688	84·0	77 6	89·7	75·4	S W		Do.	·732	84·2	79 0	93·8	78·4	W	2·316	Changeable.
9	·675	85·0	76·9	92·1	77·6	N W		Cloudy.	·722	83·4	80·0	90·1	75·9	W	·563	Cloudy.
10	·648	85·9	77·7	94·2	77·4	W N W		Overcast.	·751	79·2	78·5	85·3	74·4	W N W	·030	Overcast.
11	·628	84·0	77·2	89·5	80·4	W S W		Do.	·772	79·2	78·3	84·8	76·4	W S W	......	Do.
12	·646	83·4	76·8	87·3	79·6	W		Do.	·771	80·5	78·2	86·9	77·0	W S W	·018	Do.
13	·650	84·2	75·5	91·8	80·4	W	·016	Do.	·727	83·4	79·9	91·4	76·4	W S W	·010	Do.
14	·690	85·8	74·6	92·4	78·2	W		Do.	·689	82·1	79·3	91.4	76·4	W	·230	Do.
15	·736	85·3	75·6	93·3	80·4	W N W	070	Do.	·707	79·6	78·4	89·0	76·4	W	·290	Do.
16	·718	85·5	76·2	93·5	79·6	W N W		Heavy clouds.	·717	83·8	80·4	92·1	76·8	W S W	·004	Heavy clouds.
17	·680	86·7	76·1	93·3	81·4	W N W		Overcast.	·726	84·6	79·8	93·7	77·9	W S W	......	Overcast.
18	·692	87·9	75·6	95·2	80·6	W	·024	Nearly overcast.	·685	83·5	79 7	91·5	78·5	W	·310	Nearly overcast.
19	·729	86·7	76·8	95·9	80·6	W		Cloudy.	·661	85·7	80·1	92·9	78·1	W	......	Cloudy.
20	·756	88·2	78·9	98 0	80·4	W	·010	Do.	·710	86·6	80·7	94·0	78·4	W S W	.....	Nearly overcast.
21	·735	88·5	78·0	96·0	80·4	W S W		Do.	·753	84·8	79·2	95·6	78 2	W S W	1·764	Do.
22	·725	86·5	75·9	90·6	81·2	W		Overcast.	·806	81·8	76·7	90·3	77·2	W	·139	Overcast.
23	·724	89·0	77·7	95·3	82 9	W N W		Nearly overcast.	·797	84·2	77·6	93 3	76·9	W	·123	Changeable.
24	·766	87·8	76·9	98·0	81·4	W	·027	Cloudy.	·784	84·0	76 9	91·0	77·4	W N W	......	Cloudy.
25	·787	85·9	76·5	96 8	79·9	W		Changeable.	·807	82·5	77·0	89·4	78·4	W N W	......	Overcast.
26	·782	87·8	78·0	96·2	80·2	Variable		Hazy.	·791	85·0	78·4	94·9	78·4	W	·307	Changeable.
27	·783	83·4	77·0	93·3	79·4	S S W		Changeable.	·783	84·1	78·0	92·2	79·1	W	......	Chiefly overcast.
28	·773	87·4	79·2	93·9	80·6	W S W		Chiefly fine	·753	83·7	77·2	93·3	80·4	W N W	·200	Do.
29	·789	87·1	77·2	96·1	80·3	S W		Changeable.	·740	81·5	76·7	91·9	77 9	W N W	·710	Overcast.
30	·742	86·8	79·4	94·1	78·2	Variable		Cloudy.	·748	84·2	76·9	91·4	782	W	......	Cloudy.
31	·713	87·0	77·8	96·4	81·4	W	·930	Light clouds.	·741	84·0	77·1	90·3	786	W	......	Do.
Means	29·719	86·7	77·3	94·9	80·3	W	3·171		29·745	83·4	78·5	91·2	77·5	W	7·883	

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Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

Date.	SEPTEMBER 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Means. Wet	Max.	Min	Wind.	Rain.	Weather.	OCTOBER 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Means. Wet	Max.	Min	Wind.	Rain.	Weather.
	Inches	°	°	°	°		Inches		Inches	°	°	°	°		Inches	
1	29·707	85·9	77·6	93·1	79·4	W N W		Changeable.	29 748	85 7	76·9	92 3	79·8	W S W		Cloudy.
2	·701	87·0	77·4	94·2	80·6	W N W		Light clouds.	·749	85 0	77 1	93 1	80·3	W N W		Do.
3	·728	83·9	76·9	96·1	78·6	W N W		Hazy.	·793	85 8	78·7	95·0	79·2	N W	·022	Light clouds.
4	·716	83·9	77·8	96·1	79·4	W N W	·010	Changeable.	·779	86·2	79·4	93·3	77 9	N W		Flying clouds.
5	·739	85·0	76·9	95·4	79·4	N W		Flying clouds.	760	87·1	77·7	94 8	77·4	W N W		Cloudy.
6	·759	85 1	77 9	95·6	79·4	N W		Chiefly fine.	·778	84 9	77·4	93·3	78·4	N W		Hazy.
7	·753	85·5	78·2	93·1	79·4	W S W		Hazy.	·797	85·1	77 8	91·6	78·4	Variable		Nearly fine.
8	·761	85·8	77·6	93·3	79·7	W S W		Fine.	·838	84·8	77·3	92·1	77·4	N W		Fine.
9	·746	86.8	78·5	93·6	78·4	W S W		Light haze.	.806	85·3	76·4	93 3	77 8	N W		Hazy.
10	·743	85·9	78·1	92.1	79·4	Variable		Fine.	·804	84·6	75 6	92·5	78·2	N N W		Cloudy.
11	·772	86·4	79·3	92·3	79.7	S		Do.	·837	84·6	75·3	92·3	76.5	N N E		Light haze.
12	·810	86·0	76·9	94·4	89·2	W S W		Cloudy.	·861	84·8	78·2	91·8	75·5	S S E		Fine.
13	·814	85·5	79·2	95·4	78·4	N W	·202	Heavy clouds.	·865	86·1	78·7	93·2	77·9	S W		Cloudy.
14	·810	79.9	77·5	91·6	75·4	N N W	·513	Changeable.	·879	85·1	79·2	90 9	79 8	S S W		Hazy.
15	·767	80·0	77·1	87·5	74·6	N	1·790	Dull and stormy.	·823	83·7	78·5	92·2	79 2	S S E		Cloudy.
16	·749	81·3	78·8	86·4	75·4	N N W	1·220	Do	·850	84·7	78·8	93·3	77·9	S S E	·008	Hazy.
17	·754	84·1	80·7	90·6	78·0	N	·049	Dull but calm.	·841	85·3	77 3	94·0	78·4	N N W		Do.
18	·809	80·1	79·2	91·2	77·4	N W	1 906	Chiefly overcast.	·884	84·7	76 5	91·6	77·4	N E		Light haze.
19	·799	80·6	78·2	90 0	75·2	N W	1·235	Stormy.	·880	84·5	78·4	92·2	76·2	N N E		Changeable.
20	·759	81·7	78·4	89 5	74 6	N N W	·305	Cloudy.	·848	78·6	74 7	82 4	74 9	N N W	·575	Overcast.
21	·749	84·0	78·6	89·5	75·9	N W	·520	Changeable.	·869	82·9	77 9	87·5	75·4	S E		Flying clouds
22	·803	79·8	77·6	85·9	78·3	W S W	·385	Do.	·918	82·3	77·7	86·8	76·1	E N E	·585	Cloudy.
23	·801	77·0	76.6	86·2	76·4	W S W	·134	Do.	·922	81·1	77·0	86·1	75·9	N E	·039	Do.
24	·791	79·3	76·5	89·5	75·9	N N W	·690	Cloudy.	904	82·2	76 1	86·8	76·4	E N E		Do.
25	.788	80·4	77·1	88·5	76·1	N N W	·157	Overcast.	·891	80·6	76·6	86·5	76·2	E N E	·305	Heavy clouds.
26	·812	76·7	74·6	85 9	75 2	W N W	·140	Do.	·894	82·4	77·2	86·6	75 9	E N E	·009	Light clouds.
27	·806	80·4	77·1	86·3	75·4	N N W		Cloudy.	·879	80 2	75·9	86·1	75·4	N E		Hazy.
28	·757	83·3	78·2	86·4	76·4	W N W		Do.	·866	80·9	76.1	87·4	75 9	N N E		Cloudy.
29	·721	83·6	78·5	88·7	77·4	W		Chiefly overcast.	·876	81·8	75·2	86·6	76·6	N N E		Hazy.
30	·717	85·4	79·1	91·8	78·0	W N W		Hazy and dull.	·873	81·1	74·5	87·1	74·6	N N E		Light clouds.
31									·850	81·5	74·4	86·8	74·4	N N E		Do.
Means	29·765	83·0	77·9	91·0	77·6	W N W	9·256		29·844	83·7	76·9	90·3	77·1	N	1·543	

Daily Results of Meteorological Observations, made at the Madras Observatory during the year 1861.

Date.	November 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Wet	Max.	Min	Wind.	Rain.	Weather.	December 1861. Barometer reduced to 32° Faht.	Thermometers. Means. Dry.	Wet	Max.	Min	Wind.	Rain.	Weather
	Inches	°	°	°	°		Inches		Inches	°	°	°	°		Inches	
1	29·841	81·0	74·9	86·6	75·4	N N E		Chiefly overcast.	30·018	76·6	74·8	81·8	71·4	N E		Heavy clouds.
2	·860	76·6	76·0	83·8	74·2	N.	1·364	Overcast.	·013	75.8	74·0	81·4	74·4	N E		Overcast.
3	·873	77 9	75·3	86 8	74·0	N	·967	Stormy.	29·991	74·8	74·0	80·6	70·9	N N E		Nearly fine.
4	·803	75 1	74·6	81·4	74·6	N N E	1·396	Overcast.	·989	74·8	73·3	80·3	68·4	N		Light haze.
5	·736	78·8	75·8		74·4	N N E	·178	Do.	·983	76·8	75·7	82·7	69·4	N N E		Fine.
6	·653	70·3	70·1	75·7	70·7	N W	4·982	Do.	30·018	78·4	76·6	83·5	72 8	N E		Changeable.
7	·670	73·2	73·2	81·7	70·2	W N W	1·037	Do.	29·998	77·6	76·6	82·9	72·2	N E		Do.
8	·711	79 0	76·9	83·7	70·4	S S W	·505	Heavy clouds.	·993	77·2	77·1	83·5	70 9	N E	·040	Do.
9	·780	79·6	77·0	88·2	76·4	S W	·460	Chiefly overcast.	30·008	76·2	74·5	82.8	72·2	E N E		Light clouds.
10	·803	78·5	77·1	88·1	76·0	S W	1·105	Overcast.	29·997	75·2	73 6	83·6	68·4	N N E		Changeable.
11	·797	79 0	76·8	86·3	74·8	Variable	·090	Nearly overcast.	·949	74·8	73·4	83.5	67·8	E		Chiefly fine.
12	·829	79·5	77·1	84·7	73 6	Variable		Cloudy.	·919	75·0	73·7	81·5	67·2	S E		Fine.
13	.817	79 9	77·6	86·4	76·4	S E	220	Do.	·932	75·5	74·1	82 0	67·6	E		Hazy clouds.
14	·859	76·8	75·0	80 0	76·0	N		Do.	·959	76·6	74 9	83·0	69·2	E N E		Chiefly fine
15	·861	76·9	72·8	84·6	73·4	N N W		Do.	·947	77 6	76·5	84·1	69 6	E N E		Fine.
16	·885	75.4	70 9	82 6	70·4	N N W		Light clouds.	·929	76·7	74 9	82 8	70·6	E N E		Nearly fine.
17	·927	75 4	71·1	82 5	68·7	N W		Nearly fine.	·921	77·3	75·6	82·5	69·4	N E		Fine.
18	·969	75·6	70 7	82 9	66·4	N W		Light haze.	·952	77·3	74·7	83·4	69·4	N E		Light clouds.
19	·962	76·7	71·0	82 6	67·4	N		Do.	·965	76·8	72 2	82.6	70·4	N E		Dull.
20	·969	76·2	71·4	82 5	68·4	N N E		Cloudy.	·970	76·0	69·1	82.1	68·9	N E		Cloudy.
21	·993	76·9	70·3	81.5	68·9	N N E		Do.	30·010	77·0	69·4	81·8	68·1	E N E		Do.
22	30 004	76·7	71·5	81·4	71·4	N		Heavy clouds.	29 998	75·7	68 6	81·9	70·6	N E		Changeable.
23	·005	76·8	71·6	81·6	72·9	N N E		Fine.	·999	75·7	67·3	82·8	67·6	N N E		Chiefly fine.
24	29·999	76·2	72·1	81·4	69·4	N N E		Hazy.	·990	76·6	67·5	81·4	69·3	N E		Cloudy.
25	·998	77·4	74·3	83·7	70·8	N N E		Light clouds.	30·004	75·9	67·6	81·4	71·4	N E		Changeable.
26	30·014	76·7	74·1	80 4	73·6	N N E		Cloudy.	·016	75·7	67·4	82·1	66·4	N E		Do.
27	·023	76.6	72·3	81·5	70·4	N N E		Light haze.	·044	75·3	68·2	81·1	66·0	N E		Cloudy.
28	29·996	74·7	69·9	80·6	70 4	N N E		Fine.	·000	73·9	67·0	81·1	68·9	E N E		Hazy.
29	30 001	73·7	69 9	79 9	65·6	N N E		Light clouds.	29·978	74·0	67·8	80·9	65.4	E N E		Chiefly fine.
30	·005	75·7	72·7	81·0	66·2	N N E		Changeable.	30·013	75.5	68 4	81·6	71·8	N E		Flying clouds.
31									29 975	76·5	67 7	81·8	69·4	N N E		Do.
Means	29·888	76·8	73·5	82·9	71·7	N	12·304		29·983	76·1	72·1	82·2	69·5	N E	0·040	

The highest reduced reading of the Barometer throughout the year was 30.067, on January 1. The lowest was 29.594, on May 23. The mean annual pressure was 29.828 inches; being 0.016 less than the average of twenty years past.

The greatest heat registered by a Thermometer placed in the full sunshine was 128°·5, on May 9. The highest temperature in the shade was 107°·5, on May 12; the lowest, 63°·1, on the morning of February 16. The mean temperature of the whole year was 82°·2; being 0°·9 above the twenty year average. That of evaporation, as shewn by a wet bulb thermometer, was 75°·9, being 1°·2 above the average. The mean daily range of temperature was 14°·4.

Rain fell on 72 days. The greatest fall on any one day in the year was 4·98 inches, on November 6. There were twelve days on which the quantity measured exceeded one inch. The total fall during the year was 37·16 inches; being 11·47 less than the usual quantity, or only 76 per cent of the average of 52 years.

The wind, as registered by Osler's Anemometer, was variable *i. e.* too unsteady for any resultant to be satisfactorily deduced, on 14 days. The remaining 351 days were distributed amongst the sixteen principal point of the compass as in the subjoined table :—

N	10	E	13	S	35	W	37
N N E....	27	E S E	6	S S W	22	W N W....	30
N E	24	S E	11	S W	20	N W	21
E N E....	36	S S E	18	W S W....	29	N N W....	12

No remarkable storm or other unusual meteorological phenomenon occurred at Madras throughout the year 1861.

NORMAN ROBERT POGSON,

Government Astronomer.

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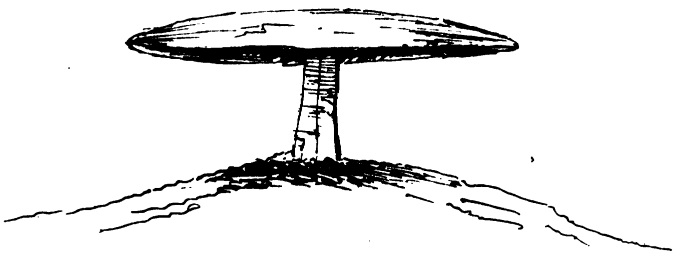
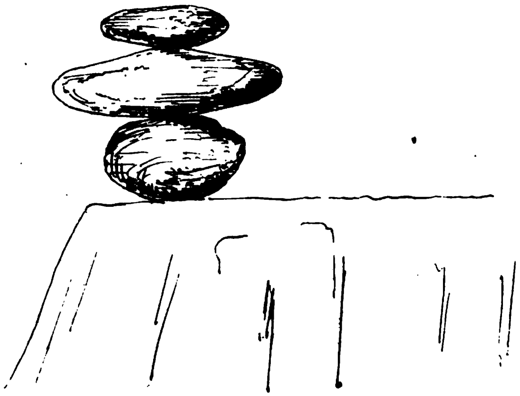
Gromlech in Malabar.



The Turks' head at Courtallum.



The Cheese Wring in Cornwall.

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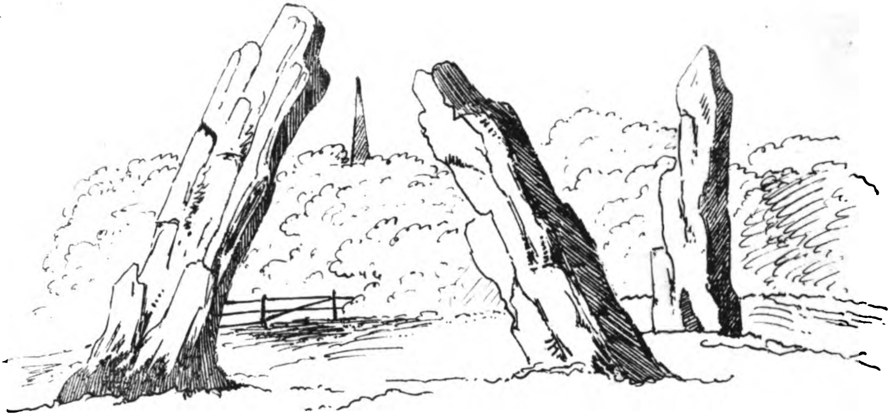
UPRIGHT STONES.

Druidic Stones near Treleck in Monmouthshire.

The longest is 15 Feet.



Upright Stones at Pallipolliam in Salem.

18 Feet high.

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Barren & Sinclair Lith. 1861.

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